GREIF INC
Form 10-K
December 20, 2018
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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-K

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x ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended October 31, 2018
or
o TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the transition period from to
Commission file number: 001-00566

GREIF, INC.
(Exact name of Registrant as specified in its charter)

State of Delaware	31-4388903
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
425 Winter Road, Delaware, Ohio	43015
(Address of principal executive offices)	(Zip Code)

Registrant’s telephone number, including area code 740-549-6000
Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class	Name of Each Exchange on Which Registered
Class A Common Stock	New York Stock Exchange
Class B Common Stock	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act: None

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Indicate by check mark if the Registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes x No o
Indicate by check mark if the Registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Exchange Act. Yes o No x
Indicate by check mark whether the Registrant (1) has filed all reports to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the Registrant was required to file such reports) and (2) has been subject to such filing requirements for the past 90 days. Yes x No o
Indicate by check mark whether the Registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the Registrant was required to submit and post such files). Yes x No o
Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of the Registrant’s knowledge, in the definitive proxy or information

statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. o
Indicate by check mark whether the Registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	x	Accelerated filer	o
Non-accelerated filer	o (Do not check if a smaller reporting company)	Smaller reporting company	o
Emerging growth company	o		

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. o
Indicate by check mark whether the Registrant is a shell company (as defined in Rule 12b-2 of the Exchange). Yes o No x
The aggregate market value of voting and non-voting common equity held by non-affiliates computed by reference to the price at which the common equity was last sold as of the last business day of the Registrant's most recently completed second fiscal quarter was as follows:
Non-voting common equity (Class A Common Stock) – $1,464,933,751
Voting common equity (Class B Common Stock) – $337,380,525
The number of shares outstanding of each of the Registrant's classes of common stock, as of December 17, 2018, was as follows:
Class A Common Stock – 25,941,279
Class B Common Stock – 22,007,725
Listed hereunder are the documents, portions of which are incorporated by reference, and the parts of this Form 10-K into which such portions are incorporated:
1. The Registrant's Definitive Proxy Statement for use in connection with the Annual Meeting of Stockholders to be held on February 26, 2019 (the "2019 Proxy Statement"), portions of which are incorporated by reference into Parts II and III of this Form 10-K. The 2019 Proxy Statement will be filed within 120 days of October 31, 2018.

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IMPORTANT INFORMATION REGARDING FORWARD-LOOKING STATEMENTS

All statements, other than statements of historical facts, included in this Annual Report on Form 10-K of Greif, Inc. and its subsidiaries (this “Form 10-K”) or incorporated herein, including, without limitation, statements regarding our future financial position, business strategy, budgets, projected costs, goals and plans and objectives of management for future operations and initiatives, are forward-looking statements within the meaning of Section 21E of the Securities Exchange Act of 1934, as amended (the “Exchange Act”). Forward-looking statements generally can be identified by the use of forward-looking terminology such as “may,” “will,” “expect,” “intend,” “estimate,” “anticipate,” "aspiration," "objective “project,” “believe,” “continue,” “on track” or “target” or the negative thereof or variations thereon or similar terminology. All forward-looking statements made in this Form 10-K are based on information currently available to our management. Forward-looking statements speak only as of the date the statements were made. Although we believe that the expectations reflected in forward-looking statements have a reasonable basis, we can give no assurance that these expectations will prove to be correct. Forward-looking statements are subject to risks and uncertainties that could cause actual events or results to differ materially from those expressed in or implied by the statements. For a discussion of the most significant risks and uncertainties that could cause our actual results to differ materially from those projected, see “Risk Factors” in Item 1A of this Form 10-K. The risks described in this Form 10-K are not all inclusive, and given these and other possible risks and uncertainties, investors should not place undue reliance on forward-looking statements as a prediction of actual results. All forward-looking statements made in this Form 10-K are expressly qualified in their entirety by reference to such risk factors. Except to the limited extent required by applicable law, we undertake no obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.

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PART I

ITEM 1. BUSINESS

(a) General Development of Business

We are a leading global producer of industrial packaging products and services with operations in over 40 countries. We offer a comprehensive line of rigid industrial packaging products, such as steel, fibre and plastic drums, rigid intermediate bulk containers, closure systems for industrial packaging products, transit protection products, water bottles and remanufactured and reconditioned industrial containers, and services, such as container life cycle management, filling, logistics, warehousing and other packaging services. We produce containerboard and corrugated products for niche markets in North America. We are also a leading global producer of flexible intermediate bulk containers. We sell timber to third parties from our timberland in the southeastern United States that we manage to maximize long-term value. In addition, we sell, from time to time, timberland and special use land, which consists of surplus land, higher and better use ("HBU") land, and development land. Our customers range from Fortune 500 companies to medium and small-sized companies in a cross section of industries.

We were founded in 1877 in Cleveland, Ohio, as "Vanderwyst and Greif," a cooperage shop co-founded by one of four Greif brothers. One year after our founding, the other three Greif brothers were invited to join the business, renamed Greif Bros. Company, making wooden barrels, casks and kegs to transport post-Civil War goods nationally and internationally. We later purchased nearly 300,000 acres of timberland to provide raw materials for our cooperage plants. We still own significant timber properties located in the southeastern United States. In 1926, we incorporated as a Delaware corporation and made a public offering as The Greif Bros. Cooperage Corporation. In 1951, we moved our headquarters from Cleveland, Ohio to Delaware, Ohio, which is in the Columbus metro-area, where our corporate headquarters are currently located. Since the latter half of the 1900s, we have transitioned from our keg and barrel heading mills, stave mills and cooperage facilities to a global producer of industrial packaging products. Following our acquisition of Van Leer Packaging in 2001, a global steel and plastic drum manufacturer, we changed our name to Greif, Inc.

Our fiscal year begins on November 1 and ends on October 31 of the following year. Any references in this Form 10-K to the years 2018, 2017 or 2016, or to any quarter of those years, relate to the fiscal year ended in that year.

As used in this Form 10-K, the terms "Greif," the "Company," "we," "us," and "our" refer to Greif, Inc. and its subsidiaries.

See subsection (g) of this Item 1, Recent Events - Proposed Acquisition of Caraustar, for information concerning our proposed acquisition of Caraustar Industries, Inc. ("Caraustar"), a leading manufacturer of high-quality recycled materials and paper products, which was announced on December 20, 2018. Unless expressly identified herein, information in this Form 10-K does not reflect our proposed acquisition of Caraustar or its business operations, products, services or financial results.

(b) Financial Information about Segments

We operate in eight business segments, which are aggregated into four reportable business segments: Rigid Industrial Packaging & Services; Paper Packaging & Services; Flexible Products & Services; and Land Management. Information related to each of these segments is included in Note 17 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K.

(c) Narrative Description of Business

Products and Services

In the Rigid Industrial Packaging & Services segment, we are a leading global producer of rigid industrial packaging products, including steel, fibre and plastic drums, rigid intermediate bulk containers, closure systems for industrial packaging products, transit protection products, water bottles and remanufactured and reconditioned industrial containers, and services, such as container life cycle management, filling, logistics, warehousing and other packaging services. We sell our rigid industrial packaging products to customers in industries such as chemicals, paints and pigments, food and beverage, petroleum, industrial coatings, agricultural, pharmaceutical and mineral products, among others.

In the Paper Packaging & Services segment, we sell containerboard, corrugated sheets, corrugated containers and other corrugated products to customers in North America in industries such as packaging, automotive, food and building products. Our corrugated container products are used to ship such diverse products as home appliances, small machinery, grocery products, automotive components, books and furniture, as well as numerous other applications.

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In the Flexible Products & Services segment, we are a leading global producer of flexible intermediate bulk containers and related services. Our flexible intermediate bulk containers consist of a polypropylene-based woven fabric that is produced at our production sites, as well as sourced from strategic regional suppliers. Our flexible products are sold globally and service customers and market segments similar to those of our Rigid Industrial Packaging & Services segment. Additionally, our flexible products significantly expand our presence in the agricultural and food industries, among others.

In the Land Management segment, we are focused on the active harvesting and regeneration of our United States timber properties to achieve sustainable long-term yields. While timber sales are subject to fluctuations, we seek to maintain a consistent cutting schedule, within the limits of market and weather conditions. We also sell, from time to time, timberland and special use land, which consists of surplus land, HBU land and development land. As of October 31, 2018, we owned approximately 243,000 acres of timber property in the southeastern United States.

Customers

Due to the variety of our products, we have many customers buying different types of our products and due to the scope of our sales, no one customer is considered principal in our total operations.

Backlog

We supply a cross-section of industries, such as chemicals, paints and pigments, food and beverage, petroleum, industrial coatings, agricultural, pharmaceutical, mineral, packaging, automotive and building products, and must make spot deliveries on a day-to-day basis as our products are required by our customers. We do not operate on a backlog to any significant extent and maintain only limited levels of finished goods. Many customers place their orders weekly for delivery during the week.

Competition

The markets in which we sell our products are highly competitive with many participants. Although no single company dominates, we face significant competitors in each of our businesses. Our competitors include large vertically integrated companies as well as numerous smaller companies. The industries in which we compete are particularly sensitive to price fluctuations caused by shifts in industry capacity and other cyclical industry conditions. Other competitive factors include design, quality and service, with varying emphasis depending on product line.

In both the rigid industrial packaging industry and the flexible products industry, we compete by offering a comprehensive line of products on a global basis. In the paper packaging industry, we compete by concentrating on providing value-added, higher-margin corrugated products to niche markets. In addition, over the past several years we have closed higher cost facilities and otherwise restructured our operations, which we believe has significantly improved our cost competitiveness.

Compliance with Governmental Regulations Concerning Environmental Matters

Our operations are subject to extensive federal, state, local and international laws, regulations, rules and ordinances relating to pollution, the protection of the environment, the generation, storage, handling, transportation, treatment, disposal and remediation of hazardous substances and waste materials and numerous other environmental laws and regulations. In the ordinary course of business, we are subject to periodic environmental inspections and monitoring by various governmental agencies. In addition, certain of our production facilities require environmental permits that are subject to revocation, modification and renewal. As of the date of filing this Form 10-K, and based on current information, we believe that the probable costs of the remediation of company-owned property will not have a material adverse effect on our financial condition or results of operations. We believe that we have adequately reserved for our liability for these matters as of October 31, 2018.

We do not believe that compliance with federal, state, local and international provisions, which have been enacted or adopted regulating the discharge of materials into the environment, or otherwise relating to the protection of the environment, has had or will have a material adverse effect upon our capital expenditures, earnings or competitive position. We do not anticipate any material capital expenditures related to environmental control in 2019. However, since 2017, three reconditioning facilities in the Milwaukee, Wisconsin area that are owned by Container Life Cycle Management LLC (“CLCM”), our U.S. reconditioning joint venture company, have been subject to investigations and proceedings conducted by federal, state and local governmental agencies concerning, among other matters, potential violations of environmental laws and regulations. We have cooperated with the governmental agencies in these investigations and proceedings. As of the filing date of this Form 10-K, no citations have been issued or fines assessed with respect to any violations of environmental laws and regulations. As a result of these investigations and proceedings, we will review all options for future actions at these facilities, including changes to existing reconditioning operations, installation of control technology, other capital expenditures, and facility relocation or closure. While not expected to

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be material, the cost of any of these actions could be sizeable. See Item 3 of this Form 10-K for information concerning these investigations and proceedings.

Refer also to Note 13 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K for additional information concerning environmental expenses and cash expenditures for the periods ended October 31, 2018, 2017 and 2016, and our reserves for environmental liabilities as of October 31, 2018 and 2017.

Raw Materials

Steel, resin and containerboard, as well as used industrial packaging for reconditioning, are the principal raw materials for the Rigid Industrial Packaging & Services segment, resin is the primary raw material for the Flexible Products & Services segment, and pulpwood, old corrugated containers for recycling and containerboard are the principal raw materials for the Paper Packaging & Services segment. We satisfy most of our needs for these raw materials through purchases on the open market or under short-term and long-term supply agreements. All of these raw materials are purchased in highly competitive, price-sensitive markets, which have historically exhibited price, demand and supply cyclicality. From time to time, some of these raw materials have been in short supply at certain of our manufacturing facilities. In those situations, we ship the raw materials in short supply from one or more of our other facilities with sufficient supply to the facility or facilities experiencing the shortage. To date, raw material shortages have not had a material adverse effect on our financial condition or results of operations.

Research and Development

While research and development projects are important to our continued growth, the amount expended in any year is not material in relation to our results of operations.

Other

Our businesses are not materially dependent upon patents, trademarks, licenses or franchises.

No material portion of our businesses is subject to renegotiation of profits or termination of contracts or subcontracts at the election of a governmental agency or authority.

The businesses of our segments are not seasonal to any material extent, although the businesses of some of our customers who are in the agricultural industries and purchase our rigid industrial packaging products and flexible products may be seasonal in nature.

Employees

As of October 31, 2018, we had approximately 13,000 full time employees. A significant number of our full time employees are covered under collective bargaining agreements. We believe that our employee relations are generally good.

(d) Financial Information about Geographic Areas

Our operations are located in North and South America, Europe, the Middle East, Africa and the Asia Pacific regions. Information related to our geographic areas of operation is included in Note 17 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K. Refer also to Quantitative and Qualitative Disclosures about Market Risk included in Item 7A of this Form 10-K.

(e) Available Information

We maintain a website at www.greif.com. We file reports with the United States Securities and Exchange Commission ("SEC") and make available, free of charge, on or through our website, our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, proxy and information statements and amendments to these reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act as soon as reasonably practicable after we have electronically filed such material with, or furnished it to, the SEC.

Any of the materials we file with the SEC may also be read and/or copied at the SEC's Public Reference Room at 100 F Street, NE, Washington, DC 20549. Information on the operation of the SEC's Public Reference Room may be obtained by calling the SEC at 1-800-SEC-0330. The SEC maintains a website that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC at www.sec.gov.

(f) Other Matters

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Our common equity securities are listed on the New York Stock Exchange (“NYSE”) under the symbols GEF and GEF.B. Our Chief Executive Officer has timely certified to the NYSE that, at the date of the certification, he was unaware of any violation by our Company of the NYSE’s corporate governance listing standards. In addition, our Chief Executive Officer and Chief Financial Officer have provided certain certifications in this Form 10-K regarding the quality of our public disclosures. Refer to Exhibits 31.1 and 31.2 to this Form 10-K.

(g) Recent Events - Proposed Acquisition of Caraustar

On December 20, 2018, two of our subsidiaries entered into a definitive Agreement and Plan of Merger (the “Merger Agreement”) with the parent of Caraustar pursuant to which we are to acquire Caraustar for a purchase price of $1.8 billion, subject to certain adjustments. The acquisition is subject to the satisfaction or waiver of certain conditions, including, among other things, the expiration or early termination of the waiting period under the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended, and approval of the stockholders of Caraustar’s parent. The majority stockholder of Caraustar’s parent has executed and delivered to us a written consent evidencing its approval of the Merger Agreement. The Merger Agreement may be terminated, and the merger may be abandoned at any time prior to the closing, as follows: (i) by mutual written agreement of us and Caraustar’s parent; (ii) by either us or Caraustar’s parent if the closing has not occurred on or before May 20, 2019 (subject to automatic extensions up to September 20, 2019, subject to the terms and conditions of the Merger Agreement); (iii) by us in connection with certain breaches by Caraustar’s parent of its representations, warranties or covenants, subject to a cure period; and (iv) by Caraustar’s parent in connection with certain breaches by us of our representations, warranties or covenants, subject to a cure period. We expect the acquisition to close during the first quarter of calendar year 2019, subject to customary closing conditions.

Caraustar is a leading manufacturer of high-quality recycled materials and paper products. Caraustar's four business lines include recycling services, mill group (coated and uncoated paperboard and specialty paperboard products), industrial products group (tubes and cores, construction products, protective packaging, adhesives) and consumer packaging (folding cartons, set-up boxes, packaging services). Caraustar serves the four principal recycled boxboard product end-use segments: tubes and cores; folding cartons; gypsum facing paper; and specialty paperboard products.

See Item 7 of this Form 10-K, Liquidity and Capital Resources - Financing Commitment for Proposed Acquisition of Caraustar, for information concerning our financing commitment related to our proposed acquisition of Caraustar. However, the receipt of the financing describe herein or any other financing is not a condition to the closing of the proposed acquisition.

Our proposed acquisition of Caraustar is subject to certain risks and uncertainties, including the following: the ability to successfully complete the acquisition of Caraustar on a timely basis, including receipt of required regulatory approvals; the occurrence of any event, change or other circumstance that could give rise to the termination of the Merger Agreement; the outcome of any legal proceedings that may be instituted against the parties and others related to the acquisition of Caraustar; the satisfaction of certain conditions to the completion of the acquisition of Caraustar; the conditions of the credit markets and our ability to issue debt to fund the acquisition on acceptable terms; if the acquisition of Caraustar is completed, the ability to retain the acquired businesses’ customers and employees, the ability to successfully integrate the acquired businesses into our operations, and the ability to achieve the expected synergies as well as accretion in margins, earnings or cash flow; competitive pressures in our various lines of business; the risk of non-renewal or a default under one or more key customer or supplier arrangements or changes to the terms of or level of purchases under those arrangements; uncertainties with respect to U.S. tax or trade laws; the effects of any investigation or action by any regulatory authority; and changes in foreign currency rates and the cost of commodities. See Item 1A of this Form 10-K for a discussion of other significant risks and uncertainties that could cause our actual results to differ materially from those projected.

ITEM 1A. RISK FACTORS

Statements contained in this Form 10-K may be “forward-looking” within the meaning of Section 21E of the Exchange Act. Such forward-looking statements are subject to certain risks and uncertainties that could cause our operating results to differ materially from those projected. The following factors, among others, in some cases have affected, and in the future could affect, our actual financial or operational performance, or both.

Historically, our Business has been Sensitive to Changes in General Economic or Business Conditions.

Our customers generally consist of other manufacturers and suppliers who purchase industrial packaging products and containerboard and related corrugated products for their own containment and shipping purposes. Because we supply a cross section of industries, such as chemicals, paints and pigments, food and beverage, petroleum, industrial coatings, agricultural, pharmaceutical, mineral products, packaging, automotive, and building products industries, and have operations in many countries, demand for our products and services has historically corresponded to changes in general economic and business conditions of the industries and countries in which we operate. The overall demand and prices for our products and services could decline as a result of a large number of factors outside our control, including economic recessions, changes in industrial production processes or consumer preference, changes in laws and regulations, inflation, tariffs, changes in published pricing indices, fluctuations in interest and currency exchange rates and changes in the fiscal or monetary policies of governments in the regions in which we operate. Accordingly, our financial performance is substantially dependent upon the general economic and business conditions existing in these industries and countries, and any prolonged or substantial economic downturn in the markets in which we operate could have a material adverse effect on our business, results of operations and financial condition.

We may not Successfully Implement our Business Strategies, Including Achieving our Growth Objectives.

We may not be able to fully implement our business strategies or realize, in whole or in part within the expected time frames, the anticipated benefits of our growth and other initiatives. Our various business strategies and initiatives are subject to significant business, economic and competitive uncertainties and contingencies, many of which are beyond our control.

In addition, we may incur certain costs to achieve efficiency improvements and growth in our business and we may not meet anticipated implementation timetables or stay within budgeted costs. As these growth initiatives are undertaken, we may not fully achieve our expected cost savings and efficiency improvements or growth rates, or these initiatives could adversely impact our customer retention or our operations. Also, our business strategies may change from time to time in light of our ability to implement our new business initiatives, competitive pressures, economic uncertainties or developments, or other factors. A variety of risks could cause us not to realize some or all of the expected benefits of these initiatives. These risks include, among others, delays in the anticipated timing of activities related to such initiatives, strategies and operating plans; increased difficulty and costs in implementing these efforts; and the incurrence of other unexpected costs associated with operating the business. As a result, there can be no assurance that we will realize these benefits. If, for any reason, the benefits we realize are less than our estimates or the implementation of these growth initiatives and business strategies adversely affect our operations or cost more or take longer to effectuate than we expect, or if our assumptions prove inaccurate, our results of operations may be materially adversely affected.

Our Operations Subject us to Currency Exchange and Political Risks that Could Adversely Affect our Results of Operations.

We have operations in over 40 countries. Management of global operations is extremely complex, and operations outside the United States are subject to additional risks that may not exist, or be as significant, in the United States. As a result of our global operations, we are subject to certain risks that could disrupt our operations or force us to incur unanticipated costs.

We also have indebtedness, agreements to purchase raw materials and agreements to sell finished products that are denominated in Euros, Turkish Lira, Russian Rubles and other currencies. Our operating performance is affected by fluctuations in currency exchange rates by:

- translations into United States dollars for financial reporting purposes of the assets and liabilities of our non-U.S. operations conducted in local currencies; and
- gains or losses from transactions conducted in currencies other than the operation’s functional currency.

We are subject to various other risks associated with operating in countries outside the U.S., such as the following:

- political, social, economic and labor instability;
- war, invasion, civil disturbance or acts of terrorism;
- taking of property by nationalization or expropriation without fair compensation;

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- changes in government policies and regulations;
- loss or non-renewal of treaties or similar agreements with foreign tax authorities;
- difficulties in enforcement of contractual obligations;
- imposition of limitations on conversions of currencies into United States dollars or remittance of dividends and other payments by international subsidiaries;
- imposition or increase of withholding and other taxes on income remittances and other payments by international subsidiaries;
- hyperinflation, currency devaluation or defaults in certain countries;
- impositions or increase of investment and other restrictions or requirements by non-United States governments;
- national and regional labor strikes, whether legal or illegal and other labor or social actions; and
- restrictive governmental trade policies, customs, tariffs, import/export and other trade compliance regulations.

The Current and Future Challenging Global Economy and Disruption and Volatility of the Financial and Credit Markets may Adversely Affect our Business.

Current global economic conditions are challenging to our global business operations. Such conditions have had, and may continue to have, a negative impact on our financial results. Future economic downturns, either in the United States, Europe or in other regions in which we do business could negatively affect our business and results of operations. The volatility of the current economic climate, especially in relation to ongoing uncertainties related to geopolitical events around the world, makes it difficult for us to predict the complete impact of the forgoing matters on our business and results of operations. Due to these current and future economic conditions, our customers may face financial difficulties, the unavailability of or reduction in commercial credit, or both, that may result in decreased sales by and revenues to our company. Certain of our customers may cease operations or seek bankruptcy protection, which would reduce our cash flows and adversely impact our results of operations. Our customers that are financially viable and not experiencing economic distress may nevertheless elect to reduce the volume of orders for our products or close facilities in an effort to remain financially stable or as a result of the unavailability of commercial credit which would negatively affect our results of operations. We may experience difficulties in servicing, renewing or repaying our outstanding debt due to continued volatility in the global economy. We may also have difficulty accessing the global credit markets if there is a tightening of commercial credit availability, which would result in decreased ability to fund capital-intensive strategic projects.

Further, we may experience challenges in forecasting revenues and operating results due to these global economic conditions. The difficulty in forecasting revenues and operating results may result in volatility in the market price of our common stock.

In addition, the lenders under our senior secured credit agreement and other borrowing facilities described in Item 7 of this Form 10-K under “Liquidity and Capital Resources – Borrowing Arrangements” and the counterparties with whom we maintain interest rate swap agreements, currency forward contracts and derivatives and other hedge agreements may be unable to perform their lending or payment obligations in whole or in part, or may cease operations or seek bankruptcy protection, which would negatively affect our cash flows and our results of operations.

A downgrade in our credit rating could also impact our ability to effectively finance our operations and could lead to increased borrowing costs and limits on our access to capital.

The equipment that we use in our manufacturing operations is expensive and requires continued maintenance. We require significant capital investment to maintain our equipment. If our existing sources of capital prove insufficient, there can be no assurance that we will be able to obtain capital to finance these expenditures on favorable terms, or at all. Any inability by us to maintain our equipment as needed or any inability to obtain capital for expenditures on equipment maintenance on favorable terms could have an adverse effect on our business, financial position and results of operations.

The Continuing Consolidation of our Customer Base and Suppliers May Intensify Pricing Pressure.

Over the last few years, many of our large industrial packaging, containerboard and corrugated products customers have acquired, or been acquired by, companies with similar or complementary product lines. In addition, many of our suppliers of raw materials such as steel, resin and paper, have undergone a similar process of consolidation. This consolidation has increased the concentration of our largest customers, resulting in increased pricing pressures from our customers. The consolidation of our largest suppliers has resulted in limited sources of supply and increased cost pressures from our suppliers. Any future consolidation of our customer base or our suppliers could negatively impact our business, results of operations and financial condition. Furthermore, if one or more of our major customers reduces, delays or cancels substantial orders, if one or more of our major suppliers is unable to timely produce and deliver our orders our business, results of operations, financial condition and cash flows may be materially and adversely affected, particularly for the period in which the reduction, delay or cancellation occurs and also possibly for subsequent periods.

We Operate in Highly Competitive Industries.

Each of our business segments operates in highly competitive industries. The most important competitive factors we face are price, quality and service. To the extent that one or more of our competitors become more successful with respect to any of these key competitive factors, we could lose customers and our sales could decline. In addition, due to the tendency of certain customers to diversify their suppliers, we could be unable to increase or maintain sales volumes with particular customers. Certain of our competitors are substantially larger and have significantly greater financial resources.

In addition, some rigid industrial packaging products are made from raw materials that are subject to pronounced price fluctuations, such as steel, which is used in the manufacture of steel drums and containers, and oil, which in turn affects the price of resin for plastic drums and containers. Particularly in well-developed markets in Europe and in the United States, any substantial increases in the supply of rigid industrial packaging resulting from capacity increases, the stockpiling of raw materials or other types of opportunistic behavior by our competitors in a period of high raw materials prices, or price wars, could adversely affect our margins and the profitability of our business. Although price is a significant basis of competition in our industry, we also compete on the basis of product reliability, the ability to deliver products on a global scale and our reputation for quality and customer service. If we fail to maintain our current standards for product quality, the scope of our distribution capabilities or our customer relationships, our business, results of operations and financial condition could be adversely affected.

Negative media reports about us or our businesses, whether accurate or inaccurate, could damage our reputation and relationships with our customers and suppliers, cause customers and suppliers to terminate their relationship with us, or impair our ability to effectively compete, which could adversely affect our business, results of operations or financial condition.

Our Business is Sensitive to Changes in Industry Demands.

Industry demand for containerboard in the United States and certain of our industrial packaging products in our United States, European and other international markets has varied in recent years causing competitive pricing pressures for those products. We compete in industries that are capital intensive, which generally leads to continued production as long as prices are sufficient to cover marginal costs. As a result, changes in industry demands, including any resulting industry over-capacity, may cause substantial price competition and, in turn, negatively impact our business, results of operations and financial condition.

Raw Material and Energy Price Fluctuations and Shortages may Adversely Impact our Manufacturing Operations and Costs.

The principal raw materials used in the manufacture of our products are steel, resin, pulpwood, old corrugated containers for recycling, used industrial packaging for reconditioning, and containerboard, which we purchase or otherwise acquire in highly competitive, price sensitive markets. These raw materials have historically exhibited price and demand cyclicality. In addition, we manufacture certain component parts for our rigid industrial packaging products and those of some of our competitors. Some of these materials and component parts have been, and in the future may be, in short supply. For example, the availability of these raw materials and component parts and/or our ability to purchase and transport these raw materials and produce and transport these component parts may be unexpectedly disrupted by adverse weather conditions, natural disasters, man-made disasters, a substantial economic downturn in the industries that provide any of those raw materials, or competition for use of raw materials and component parts in other regions or countries. However, we have not recently experienced any significant difficulty in obtaining our principal raw materials or component parts. We have long-term supply contracts in place for obtaining a portion of our principal raw materials. The cost of producing our products is also sensitive to the price of energy (including its impact on transport costs). Energy prices, in particular oil and natural gas, have fluctuated in recent years, with a corresponding effect on our production costs. Potential legislation, regulatory action and international treaties related to climate change, especially those related to the regulation of greenhouse gases, may result in significant increases in raw material and energy costs. There can be no assurance that we will be able to recoup any

past or future increases in the cost of energy and raw materials.
Changes in U.S. Trade Policies Could Impact the Cost of Imported Goods into the U.S., Which May Materially Impact Our Revenues or Increase Our Operating Costs.
In March 2018, the U.S. announced new tariffs on imported steel and aluminum products. Other international trade actions and initiatives also have been announced, notably the imposition by the U.S. of additional tariffs on products of Chinese origin, and China's imposition of additional tariffs on U.S.-origin goods. If we are unable to mitigate the impact of these additional duties, our business and profits may be materially and adversely affected. Further changes in U.S. trade policy, or additional sanctions, could result in retaliatory actions by other countries that could materially and negatively impact the volume of economic activity

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in the U.S., which, in turn, could reduce our revenues, and increase our operating costs. In addition, many of our customers use our packaging to transport their products internationally. The impact of duties and retaliatory actions on their businesses could result in a negative impact on our business, results of operations and financial condition.

The results of the United Kingdom's referendum on withdrawal from the European Union may have a negative effect on global economic conditions, financial markets and our business.

In June 2016, a majority of voters in the United Kingdom elected to withdraw from the European Union (the "EU") in a national referendum. In March 2017, the United Kingdom formally notified the EU of its intention to withdraw pursuant to Article 50 of the Lisbon Treaty. The referendum was advisory, and the terms of any withdrawal are subject to a negotiation period that could last until March 2019. The referendum has created significant uncertainty about the future relationship between the United Kingdom and the EU, and has given rise to calls for the governments of other EU member states to consider withdrawal.

These developments, or the perception that any of them could occur, may have a material adverse effect on global economic conditions and the stability of global financial markets, and could significantly reduce global market liquidity and restrict the ability of key market participants to operate in certain financial markets. Asset valuations, currency exchange rates and credit ratings may be especially subject to increased market volatility. Lack of clarity about future United Kingdom laws and regulations as the United Kingdom determines which EU laws to replace or replicate in the event of a withdrawal, could depress economic activity, restrict our access to capital or adversely affect our contracts or relationships with customers in the United Kingdom or elsewhere in the European economic area. If the United Kingdom and the EU are unable to negotiate acceptable withdrawal terms or if other EU member states pursue withdrawal, barrier-free access between the United Kingdom and other EU member states or among the European economic area overall could be diminished or eliminated. Any of these factors could have a material adverse effect on our business, results of operations and financial condition.

Geopolitical Conditions, Including Direct or Indirect Acts of War or Terrorism, Could Have A Material Adverse Effect on our Operations and Financial Results.

Our operations could be disrupted by geopolitical conditions such as international boycotts and sanctions, acts of war, terrorist activity or other similar events. Such events could make it difficult or impossible to manufacture or deliver products to our customers, receive production materials from our suppliers, or perform critical functions, which could adversely affect our business globally or in certain regions. While we maintain similar manufacturing capacities at different locations and coordinate multi-source supplier programs on many of our materials which would better enable us to respond to these types of events, we cannot be sure that our plans will fully protect us from all such disruptions.

We May Encounter Difficulties Arising from Acquisitions.

We have invested a substantial amount of capital in acquisitions, joint ventures and strategic investments and we expect that we will continue to do so in the foreseeable future. We are continually evaluating acquisitions and strategic investments that are significant to our business both in the United States and internationally. Acquisitions, joint ventures and strategic investments involve numerous risks, including the failure to identify suitable acquisition candidates, complete acquisitions on acceptable terms and conditions, retain key customers, employees and contracts, the inability to integrate businesses without material disruption, unanticipated costs incurred in connection with integrating businesses, the incurrence of liabilities greater than anticipated or operating results that are less than anticipated, the inability to realize the projected value, and the inability to realize projected synergies. In addition, acquisitions, joint ventures and strategic investments and associated integration activities require time and attention of management and other key personnel, and other companies in our industries have similar acquisition and investment strategies. There can be no assurance that any acquisitions, joint ventures and strategic investments will be successfully integrated into our operations, that competition for acquisitions will not intensify or that we will be able to complete such acquisitions, joint ventures and strategic investments on acceptable terms and conditions. The costs of unsuccessful acquisition, joint venture and strategic investment efforts may adversely affect our results of operations, financial condition or prospects.

In Connection With Acquisitions or Divestitures, We may become Subject to Liabilities.

In connection with any acquisitions or divestitures, we may become subject to liabilities or legal claims, including but not limited to third party liability and other tort claims; claims for breach of contract; employment-related claims;

environmental, health and safety liabilities, conditions or damage; permitting, regulatory or other compliance with law issues; or tax liabilities. If we become subject to any of these liabilities or claims, and they are not adequately covered by insurance or an enforceable indemnity or similar agreement from a creditworthy counterparty, we may be responsible for significant out-of-pocket expenditures. These liabilities, if they materialize, could have a material adverse effect on our business, financial condition and results of operations.

We may Incur Additional Restructuring Costs and there is no Guarantee that our Efforts to Reduce Costs Will Be Successful.

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We have restructured portions of our operations from time to time in recent years, particularly following acquisitions of businesses and periods of economic downturn due to local, regional or global economic conditions. We will continue to implement continuous improvement initiatives necessary or desirable to improve our business portfolio, address underperforming assets and generate additional cash. These initiatives may include selling, general and administrative reductions throughout our Company and have and will likely continue to result in the rationalization of manufacturing facilities.

The rationalization of our manufacturing facilities may result in temporary constraints upon our ability to produce the quantity of products necessary to fill orders and thereby complete sales in a timely manner. In addition, system upgrades at our manufacturing facilities that impact ordering, production scheduling and other related manufacturing processes are complex, and could impact or delay production targets. A prolonged delay in our ability to fill orders on a timely basis could affect customer demand for our products and increase the size of our product inventories, causing future reductions in our manufacturing schedules and adversely affecting our results of operations. Moreover, our continuous development and production of new products will often involve the retooling of existing manufacturing facilities. This retooling may limit our production capacity at certain times in the future, which could adversely affect our results of operations and financial condition. In addition, the expansion and reconfiguration of existing manufacturing facilities could increase the risk of production delays, as well as require significant investments of capital.

While we expect these initiatives to result in significant profit opportunities and savings throughout our organization, our estimated profits and savings are based on several assumptions that may prove to be inaccurate, and as a result, there can be no assurance that we will realize these profits and cost savings or that, if realized, these profits and cost savings will be sustained. Failure to achieve or delays in achieving projected levels of efficiencies and cost savings from such measures, or unanticipated inefficiencies resulting from manufacturing and administrative reorganization actions in progress or contemplated, could adversely affect our results of operations and, financial condition and harm our reputation.

We Could be Subject to Changes in our Tax Rates, the Adoption of New U.S. or Foreign Tax Legislation or Exposure to Additional Tax Liabilities.

The multinational nature of our business subjects us to taxation in the United States and numerous foreign jurisdictions. Due to economic and political conditions, tax rates in various jurisdictions may be subject to significant change. Our future effective tax rates could be affected by changes in the mix of earnings in countries with differing statutory tax rates, changes in the valuation of deferred tax assets and liabilities, or changes in tax laws or their interpretation.

The Tax Cuts and Jobs Act of 2017 (the "Tax Reform Act") was enacted into law in December 2017. The Tax Reform Act, among other things, reduced the U.S. federal corporate tax rate from 35 percent to 21 percent and required companies to pay a one-time tax to repatriate, for U.S. purposes, earnings of certain foreign subsidiaries that were previously deferred for tax purposes. In addition, beginning in our fiscal year 2019, the Tax Reform Act limits certain deductions and creates new taxes on certain foreign sourced earnings. While we generally expect the impact of the Tax Reform Act to be positive, it is possible that the limitation of certain deductions and the creation of new taxes could be more detrimental to us than anticipated.

Tax laws are complex and subject to varying interpretations. At this time, we believe we are properly reflecting the provision for taxes on income using all current enacted global tax laws in every jurisdiction in which we operate. However, there can be no assurance that our tax positions will not be challenged by relevant tax authorities or that we would be successful in any such challenge.

Full Realization of our Deferred Tax Assets may be Affected By a Number Of Factors.

We have deferred tax assets, including foreign net operating loss carryforwards along with U.S. and foreign capital loss carryforwards, employee and retiree benefit items, and other accruals not yet deductible for tax purposes. We have established valuation allowances to reduce those deferred tax assets to an amount that is more likely than not to be realized. Our ability to use these deferred tax assets depends in part upon our having future taxable income during the periods in which these temporary differences reverse or our ability to carry back any losses created by the deduction of these temporary differences. We expect to realize these assets over an extended period. However, if we were unable to generate sufficient future taxable income in the U.S. and certain foreign jurisdictions, or if there were a significant change in the time period within which the underlying temporary differences became taxable or deductible, we could be required to increase our valuation allowances against our deferred tax assets, which could have a material adverse effect on our financial condition and results of operations.

Several Operations are Conducted by Joint Ventures That We Cannot Operate Solely for our Benefit.

Several operations, particularly in developing countries, are conducted through joint ventures, such as a significant joint venture in our Flexible Products & Services segment. In countries that require us to conduct business through a joint venture with a local joint venture partner, the loss of a joint venture partner or a joint venture partner’s loss of its ability to conduct business in such

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country may impact our ability to conduct business in that country. Sanctions that apply to a partner of a joint venture partner or to a joint venture's directors or officers could also impact our ability to conduct business through that joint venture.

In joint ventures, we share ownership and, in some instances, management of a company with one or more parties who may or may not have the same goals, strategies, priorities or resources as we do. In general, joint ventures are intended to be operated for the benefit of all co-owners, rather than for our exclusive benefit. Operating a business as a joint venture often requires additional organizational formalities as well as time-consuming procedures for sharing information, accounting and making decisions. In certain cases, our joint venture partners must agree in order for the applicable joint venture to take certain actions, including acquisitions, the sale of assets, budget approvals, borrowing money and granting liens on joint venture property. Our inability to take unilateral action that we believe is in our best interests may have an adverse effect on the financial performance of the joint venture and the return on our investment. In joint ventures, we believe our relationship with our co-owners is an important factor to the success of the joint venture, and if a co-owner changes, our relationship may be adversely affected. In addition, the benefits from a successful joint venture are shared among the co-owners, so that we do not receive all the benefits from our successful joint ventures. Finally, we may be required on a legal or practical basis or both, to accept liability for obligations of a joint venture beyond our economic interest, including in cases where our co-owner becomes bankrupt or is otherwise unable to meet its commitments. For additional information with respect to the joint venture relating to our Flexible Products & Services segment, refer to Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operation – Variable Interest Entities.

Certain of the Agreements that Govern our Joint Ventures Provide our Partners With Put or Call Options.

The agreements that govern certain of our current joint ventures under certain circumstances provide the joint venture partner with the right to sell their participation in the joint venture to us or the right to acquire our participation in the joint venture. Some of the joint venture agreements provide that the joint venture partner can sell its participation for a certain purchase price calculated on the basis of a fixed multiple. Such put and call rights may result in financial risks for us. In addition, such rights could negatively impact our operations if as a result of their exercise we lose access to members of our management teams that are familiar with local markets or distribution and manufacturing channels.

Our Ability to Attract, Develop and Retain Talented and Qualified Employees, Managers and Executives Is Critical to our Success.

Our ability to attract, develop and retain talented and qualified employees, including executives and other key managers, is important to our business. This is becoming more difficult in the current highly competitive hiring and retention environment. The retirement of or unforeseen loss of key officers and employees without appropriate succession planning or the ability to develop or hire replacements could hinder our strategic planning and execution and make it difficult to manage our business and meet our objectives resulting in a material adverse effect on our business, results of operations and financial condition.

Our Business may be Adversely Impacted by Work Stoppages and Other Labor Relations Matters.

We are subject to risk of work stoppages and other labor relations matters because a significant number of our employees are represented by unions. We have experienced work stoppages and strikes in the past, and there may be work stoppages and strikes in the future. Any prolonged work stoppage or strike at any one of our principal manufacturing facilities could have a negative impact on our business, results of operations and financial condition. In addition, upon the expiration of existing collective bargaining agreements, we may not reach new agreements without union action and any such new agreements may not be on terms satisfactory to us.

We may not Successfully Identify Illegal Immigrants in our Workforce.

Our business is subject to laws regarding employment of illegal immigrants. Although we have taken steps that we believe are sufficient and appropriate to ensure compliance with immigration laws, we cannot provide assurance that we have identified, or will identify in the future, all illegal immigrants who work for us. Our failure to identify illegal immigrants who work for us may result in fines or other penalties being imposed upon us, which could have an adverse effect on our business, financial condition and results of operations.

Our Pension and Postretirement Plans are Underfunded and will Require Future Cash Contributions, and our Required Future Cash Contributions could be Higher than we Expect, each of which could have a Material Adverse Effect on

our Financial Condition and Liquidity.
We sponsor various pension and similar benefit plans worldwide.

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Our U.S. and non-U.S. pension and postretirement plans were underfunded by an aggregate of $67.6 million and $10.7 million, respectively, as of October 31, 2018. We are legally required to make cash contributions to our pension plans in the future, and those cash contributions could be material.

In fiscal 2019, we expect, but are not obligated, to make cash contributions and direct benefit payments of approximately $14.3 million and $1.3 million to our U.S. and non-U.S. pension and postretirement plans, respectively, which we believe will be sufficient to meet the minimum funding requirements under applicable laws. We expect, however, our future funding obligations for our pension and postretirement plans depend upon the levels of benefits provided for by these plans, the future performance of assets set aside for these plans, the rates of interest used to determine funding levels, the impact of potential business dispositions, actuarial data and experience, and any changes in government laws and regulations. Accordingly, our future funding requirements for our pension and postretirement plans could be higher than expected, which could have a material adverse effect on our financial condition and liquidity.

In addition, our pension plans hold a significant amount of equity securities. If the market values of these securities decline, our pension expense and funding requirements will increase, which could have a material adverse effect on our financial condition and liquidity.

Any decrease in interest rates and asset returns, if and to the extent not offset by contributions, could increase our obligations under our pension plans. If the performance of assets held in these pension plans does not meet our expectations, our cash contributions for these plans could be higher than we expect, which could have a material adverse effect on our financial condition and liquidity.

We may be Subject to Losses that Might not be Covered in Whole or in Part by Existing Insurance Reserves or Insurance Coverage.

We are self-insured for certain of the claims made under our employee medical and dental insurance programs and for certain of our workers' compensation claims. We establish reserves for estimated costs related to pending claims, administrative fees and claims incurred but not reported. Because establishing reserves is an inherently uncertain process involving estimates, currently established reserves may not be adequate to cover the actual liability for claims made under our employee medical and dental insurance programs and for certain of our workers' compensation claims. If we conclude that our estimates are incorrect and our reserves are inadequate for these claims, we will need to increase our reserves, which could adversely affect our financial condition and results of operations.

We have comprehensive liability, fire and extended coverage insurance on our facilities, with policy specifications and insured limits customarily carried for similar properties. However, there are certain types of losses, such as losses resulting from wars, acts of terrorism, wind storm, flood, earthquake or other natural disasters, or pollution, that may be uninsurable or subject to restrictive policy conditions. In these instances, should a loss occur in excess of insured limits, we could lose capital invested in that property, as well as the anticipated future revenues derived from the manufacturing activities conducted at that property, while remaining obligated for any financial obligations related to the property. Any such loss would adversely impact our business, financial condition and results of operations.

We purchase insurance policies covering general liability and product liability with substantial policy limits. However, there can be no assurance that any liability claim would be adequately covered by our applicable insurance policies or it would not be excluded from coverage based on the terms and conditions of the policy. This could also apply to any applicable contractual indemnity.

We also purchase environmental liability policies where legally required and may elect to purchase coverage in other circumstances in order to transfer all or a portion of environmental liability risk through insurance. However, there can be no assurance that any environmental liability claim would be adequately covered by our applicable insurance policies or that it would not be excluded from coverage based on the terms and conditions of the policy.

Our Business Depends on the Uninterrupted Operations of Our Facilities, Systems and Business Functions, including our Information Technology (IT) and Other Business Systems.

Our business is dependent upon our ability to execute, in an efficient and uninterrupted fashion, necessary business functions, such as accessing key business data, financial information, order processing, invoicing and the operation of IT dependent manufacturing equipment. In addition, a significant portion of the communication between our employees, customers and suppliers around the world depends on our IT systems. A shut-down of or inability to access one or more of our facilities, a power outage, a pandemic, or a failure of one or more of our IT, telecommunications or other systems could significantly impair our ability to perform such functions on a timely basis.

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We are in the process of implementing a standard IT platform across our business and have successfully completed implementation in approximately three-fourths of our locations. The transition from many former systems, many of which were acquired in connection with business acquisitions, to a single system will reduce complexity and inefficiencies in monitoring business results and consolidating financial data. The transition could result in adverse business effects. This project has been ongoing for several years requiring significant human and financial resources and is expected to be substantially complete by fiscal 2020, with work at our Flexible Products & Services operations being completed later in 2020. There can be no assurance that this project will be successful, and even if successful, there can be no assurance that other difficulties and inefficiencies will not exist in our systems.

We have established a business continuity plan in an effort to ensure the continuation of core business operations in the event that normal operations could not be performed due to a catastrophic event. While we continue to test and assess our business continuity plan to ensure it meets the needs of our core business operations and addresses multiple business interruption events, there is no assurance that core business operations could be performed upon the occurrence of such an event.

A Security Breach of Customer, Employee, Supplier or Company Information may have a Material Adverse Effect on our Business, Financial Condition and Results of Operations.

In the conduct of our business, we collect, use, transmit, store and report data on information systems and interact with customers, vendors and employees. Increased global IT security threats and more sophisticated and targeted computer crime pose a risk to the security of our systems and networks and the confidentiality, availability and integrity of our data. Despite our security measures, our IT systems and infrastructure may be vulnerable to computer viruses, cyber-attacks, security breaches caused by employee error or malfeasance or other disruptions. Any such threat could compromise our networks and the information stored there could be accessed, publicly disclosed, lost or stolen. A security breach of our computer systems could interrupt or damage our operations or harm our reputation. In addition, we could be subject to legal claims or proceedings, liability under laws that protect the privacy of personal information and regulatory penalties if confidential information relating to customers, suppliers, employees or other parties is misappropriated from our computer system.

In May 2018, the EU enacted the General Data Protection Regulation, which provides for significantly increased responsibilities for companies that process EU personal data as well as significant penalties for noncompliance. As a result of these new regulations, we expect to see increased regulatory and customer attention surrounding data privacy. Furthermore, outside of the EU, we continue to see increased regulation of data privacy and security, including the adoption of more stringent subject matter specific state laws and national laws regulating the collection and use of data, as well as security and data breach obligations. The uncertainty and changes in the requirements of multiple jurisdictions may increase the cost of compliance, reduce demand for our services, restrict our ability to offer services in certain locations, impact our customers' ability to deploy our solutions in certain jurisdictions, or subject us to sanctions by national data protection regulators, all of which could harm our business, financial condition, and results of operations. Failure to provide adequate privacy protections and maintain compliance with the new data privacy laws, like the General Data Protection Regulation, could jeopardize business transactions across borders and result in significant penalties. These laws could create liability for us or increase our cost of doing business.

Similar security threats exist with respect to the IT systems of our lenders, suppliers, consultants, advisors and other third parties with whom we conduct business. A security breach of those computer systems could result in the loss, theft or disclosure of confidential information and could also interrupt or damage our operations, harm our reputation and subject us to legal claims.

The regulatory framework for privacy issues is evolving worldwide, and various government and consumer agencies and public advocacy groups have called for new regulation and changes in industry practices. It is possible that new laws and regulations will be adopted in the United States and internationally, or existing laws and regulations may be interpreted in new ways that would affect our business. Complying with any new regulatory requirements could force us to incur substantial costs or require us to change our business practices in a manner that could reduce our revenue or compromise our ability to effectively pursue our growth strategy.

To date, we have seen no material impact on our business or operations from these threats. However, we cannot assure that our security efforts will prevent unauthorized access or loss of functionality to our or our third-party providers' systems.

Legislation/Regulation Related to Environmental and Health and Safety Matters and Corporate Social Responsibility could Negatively Impact our Operations and Financial Performance.

We must comply with extensive laws, rules and regulations in the United States and in each of the countries where we conduct business regarding environmental matters, such as air, soil and water quality and waste disposal. We must also comply with extensive laws, rules and regulations regarding safety, health and corporate responsibility matters. There can be no assurance that compliance with existing and new laws, rules and regulations will not require significant expenditures.

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In addition, laws, rules and regulations, as well as the interpretation and administration of such laws and regulations by governmental agencies, can change and restrict or prohibit the manner in which we conduct our current operations, require additional permits to engage in some or all of our current operations, or increase the cost of some or all our operations. For example, certain of the remedies being sought by the U.S. EPA in the proceedings relating to the Container Life Cycle Management LLC ("CLCM") facilities in the Milwaukee, Wisconsin area seek to implement changes in the way certain laws and regulations are interpreted and administered with respect to our reconditioning business. Such changes could adversely affect our business, results of operations and financial condition.

We are also subject to transportation safety regulations promulgated by the U.S. Department of Transportation ("DOT") and agencies in other jurisdictions. Both the DOT regulations and standards issued by the United Nations and adopted by various jurisdictions outside the United States set forth requirements related to the transportation of both hazardous and nonhazardous materials in some of our packaging products and subject our company to random inspections and testing to ensure compliance. Failure to comply could result in fines to us and could affect our business, results of operations and financial condition.

We are subject to laws, rules and regulations relating to some of the raw materials, such as resins and epoxy-based coatings, used in our rigid container business. These materials may contain Bisphenol-A (BPA), a chemical monomer that can be toxic in sufficient quantities, and is used in several food contact applications. Regulatory agencies in several jurisdictions worldwide have found these materials to be safe for food contact at current levels, but a significant change in regulatory rulings concerning BPA could have an adverse effect on our business.

At the EU-level, many laws and regulations are designed to protect human health and the environment. For example, Directive 2004/35/EC concerns obligations to remedy damages to the environment, which could require us to remediate contamination identified at sites we own or use. Other EU directives limit pollution from industrial activities, reduce emissions to air, water and soil, protect water resources, reduce waste, protect employee health and safety and regulate the registration, evaluation, authorization and restriction of chemicals. See “Business-Regulation.” Failure to comply with these laws, or a change in the applicable legal framework, could affect our business, results of operations and financial condition.

Our customers in the food industry are subject to increasing laws, rules and regulations relating to food safety. As a result, customers may demand that changes be made to our products or facilities, as well as other aspects of our production processes, that may require the investment of capital. The failure to comply with these requests could adversely affect our relationships with some customers and result in negative effects on our business, results of operations and financial condition.

We are subject to the annual disclosure and reporting requirements regarding the use of “conflict minerals” from the Democratic Republic of the Congo and adjoining countries pursuant to Section 1502 of The Dodd-Frank Wall Street Reform and Consumer Protection Act. These requirements could affect the sourcing, availability and cost of minerals used in the manufacture of certain of our products. We have incurred and will continue to incur costs associated with complying with these supply chain due diligence procedures. In addition, because our supply chain is complex, we may face reputation challenges with our customers and other stakeholders if we are unable to sufficiently verify the origins of all minerals used in our products through the due diligence procedures that we implement.

Although there may be adverse financial impact (including compliance costs, potential permitting delays and increased cost of energy, raw materials and transportation) associated with any legislation, regulation or other action, the extent and magnitude of that impact cannot be reliably or accurately estimated due to the fact that some requirements have only recently been adopted and the present uncertainty regarding other additional measures and how they will be implemented. In addition, environmental, health and safety laws and regulations applicable to our business and the business of our customers, and the interpretation or enforcement of these laws and regulations, are constantly evolving and it is impossible to predict accurately the effect that changes in these laws and regulations, or their interpretation or enforcement, may have upon our business, results of operations or financial condition. Should environmental laws and regulations, or their interpretation or enforcement, become more stringent, our costs could increase, which may have a material adverse effect on our business, results of operations and financial condition.

Product Liability Claims and Other Legal Proceedings could Adversely Affect our Operations and Financial Performance.

We produce products and provide services related to other parties' products, including sensitive products such as food ingredients, pharmaceutical ingredients and hazardous substances. Incidents involving these product types can involve risk of recall, contamination, spillage, leakage, fires, and explosions, which can threaten individual health and cause the breakdown or failure of equipment or processes and the performance of facilities below expected levels of capacity. If any of our customers have such accidents involving our products, they may bring product liability claims against us. While we have built extensive operational processes to ensure that the design and manufacture of our products meet rigorous quality standards, there can be no assurance that we or our customers will not experience operational process failures that could result in potential product, safety, regulatory or environmental claims and associated litigation. We are also subject to a variety of legal proceedings and legal compliance risks in our areas of operation around the globe. Any such claims, whether with or without merit, could be time consuming and expensive to defend and could divert management's attention and resources. In accordance with customary practice, we maintain insurance against some, but not all, of these potential claims. In the future, we may not be able to maintain insurance at commercially acceptable premium levels at all. In addition, the levels of insurance we maintain may not be adequate to fully cover any and all losses or liabilities. If any significant judgment or claim is not fully insured or indemnified against, it could have a material adverse impact on our business, financial condition and results of operations.

We and the industries in which we operate are at times being reviewed or investigated by regulators and other governmental agencies, which could lead to enforcement actions, fines and penalties or the assertion of private litigation claims and damages. Simply responding to actual or threatened litigation or government investigations of our compliance with regulatory standards may require significant expenditures of time and other resources. While we believe that we have adopted appropriate risk management and compliance programs, the global and diverse nature of our operations means that legal and compliance risks will continue to exist and legal proceedings and other contingencies, the outcome of which cannot be predicted with certainty, will arise from time to time that could adversely affect our business, results of operations and financial condition.

We may Incur Fines or Penalties, Damage to our Reputation or other Adverse Consequences if our Employees, Agents or Business Partners Violate, or are Alleged to have Violated, Anti-bribery, Competition or Other Laws.

We cannot provide assurance that our internal controls will always protect us from reckless or criminal acts committed by our employees, agents or business partners that would violate U.S. and/or non-U.S. laws, including anti-bribery, competition, trade sanctions and regulation, and other laws. Any such improper actions could subject us to civil or criminal investigations in the U.S. and in other jurisdictions, could lead to substantial civil or criminal monetary and non-monetary penalties against us or our subsidiaries, and could damage our reputation. Even the allegation or appearance of our employees, agents or business partners acting improperly or illegally could damage our reputation and result in significant expenditures in investigating and responding to such actions.

Changing Climate, Climate Change Regulations and Greenhouse Gas Effects may Adversely Affect our Operations and Financial Performance.

There is continuing concern from members of the scientific community and the general public that emissions of greenhouse gases ("GHG") and other human activities have or will cause significant changes in weather patterns and increase the frequency or severity of weather events, wildfires and flooding. Climate change creates physical and financial risk. Physical risks from climate change include an increase in sea level and changes in weather conditions, such as an increase in precipitation, droughts and extreme weather events. These types of events may adversely impact us, our suppliers, our customers and their ability to purchase our products and our ability to manufacture and transport our products on a timely basis and could result in a material adverse effect on our business, results of operations and financial condition.

We believe it is likely that the scientific and political attention to issues concerning the extent and causes of climate change will continue, with the potential for further legislation and regulations that could affect our results of operations and financial condition. Foreign, federal, state and local regulatory and legislative bodies have proposed various legislative and regulatory measures relating to climate change, regulating GHG emissions and energy policies. If such legislation or regulations are enacted, we could incur increased energy, environmental and other costs and capital expenditures to comply with the limitations. Failure to comply with these regulations could result in fines to our company and could affect our business, results of operations and financial condition.

We, along with other companies in many business sectors, including our customers, are considering and implementing ways to reduce GHG emissions. As a result, our customers may request that changes be made to our products or facilities, as well as other aspects of our production processes, that increase costs and may require the investment of capital. The failure to comply with these requests could adversely affect our relationships with some customers, which in turn could adversely affect our business, results of operations and financial condition.

We could face increased costs related to defending and resolving legal claims and other litigation related to climate change and the alleged impact of our operations on climate change.

The Frequency and Volume of our Timber and Timberland Sales will Impact our Financial Performance.

We have a significant inventory of standing timber and timberland and approximately 17,900 acres of special use properties in the United States as of October 31, 2018. The frequency, demand for and volume of sales of timber, timberland and special use properties will have an effect on our financial condition and results of operations. In addition, volatility in the real estate market for special use properties could negatively affect our results of operations.

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Changes in U.S. Generally Accepted Accounting Principles (U.S. GAAP) and SEC Rules and Regulations could Materially Impact our Reported Results.

U.S. GAAP and SEC accounting and reporting changes have become more frequent and significant in the past several years. These changes could have significant effects on our reported results when compared to prior periods and other companies and may even require us to retrospectively adjust prior periods from time to time. Additionally, material changes to the presentation of transactions in the consolidated financial statements could impact key ratios that analysts and credit rating agencies use to rate our company, increase our cost of borrowing and ultimately our ability to access the credit markets in an efficient manner.

The Financial Accounting Standard Board (“FASB”) has issued an Accounting Standards Update ("ASU") that provides new requirements for revenue recognition effective for us on November 1, 2018. We anticipate that the impact of this standard will be limited to expanded disclosures, with no material impact on our financial position, results of operations, comprehensive income or cash flows. The FASB has also issued an ASU that provides new requirements for classification of certain cash receipts and cash payments on the statement of cash flows. The ASU requires the beneficial interests obtained through securitization of financial assets be disclosed as a non-cash activity and cash receipts from beneficial interests be classified as cash inflows from investing activities. The update is effective for us on November 1, 2018, and will materially impact our cash flows from operating activities and cash flows from investing activities within the statement of cash flows. However, we do not anticipate the adoption will have a material impact on our financial position, results of operations, comprehensive income, cash flows or disclosures, other than the impact mentioned above. The FASB has also issued an ASU that provides new requirements for accounting for and disclosure of lease assets and lease liabilities on the balance sheet and disclosure of key information about lease arrangements effective for us on November 1, 2019 and we expect to elect certain available transitional practical expedients. We are in the process of determining the potential impact of adopting this guidance on our financial position, results of operations, comprehensive income, cash flows and disclosures, but expect to recognize a significant liability and corresponding asset associated with in-scope operating leases.

If We Fail to Maintain an Effective System of Internal Control, the Company may not be able to Accurately Report Financial Results or Prevent Fraud.

Effective internal controls are necessary to provide reliable financial reports and to assist in the effective prevention of fraud. We must annually evaluate our internal control procedures to satisfy the requirements of Section 404 of the Sarbanes-Oxley Act of 2002, which requires management and auditors to assess the effectiveness of internal controls. As described in Item 9A of this Form 10-K, management has concluded that our internal controls over financial reporting were effective as of October 31, 2018. In the past, we have reported material weaknesses in the adequacy of our internal controls, and there is no assurance that, in the future, material weaknesses will not be identified that would cause management to change its current conclusion as to the effectiveness of our internal controls. If we fail to maintain effective internal controls, we could report material weaknesses in the future, indicating that there is a reasonable possibility that our financial statements do not accurately reflect our financial condition.

We have a Significant Amount of Goodwill and Long-lived Assets which, if Impaired in the Future, would Adversely Impact our Results of Operations.

Our goodwill could be impaired if the fair value of any particular reporting unit is less than the carrying value of that reporting unit. Impairment of our goodwill would reduce our net income in the period of any such write down. We are required to evaluate goodwill reflected on its balance sheet at least annually, or when circumstances indicate a potential impairment. If it determines that the goodwill is impaired, we would be required to write off a portion or all of the goodwill. At October 31, 2018, the carrying value of our goodwill was $776.0 million.

We may be required to record future impairments of our long-lived assets as we continue to restructure our business. Decisions to sell or close plants could reduce the estimated useful life of an asset group or indicate that the fair value of the asset group is less than the carrying value. We may also experience declines in particular businesses due to competition or other outside forces indicating our long-lived assets are not recoverable. Any resulting impairments will impact net income in the period in which the triggering event occurs and could be significant, which could have a material adverse effect on our financial condition and results of operations.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

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ITEM 2. PROPERTIES

The following are our principal operating locations and the products manufactured at such facilities or the use of such facilities. We consider our operating properties to be in satisfactory condition and adequate to meet our present needs. However, we expect to make further additions, improvements and consolidations of our properties to support our business.

Location	Products or Use	Owned	Leased
RIGID INDUSTRIAL PACKAGING & SERVICES			
Algeria	Steel drums	—	1
Argentina	Steel and plastic drums, pails, intermediate bulk containers, and water bottles	2	1
Australia	Closures	—	2
Austria	Steel drums, intermediate bulk containers, and reconditioned containers and services	1	—
Belgium	Steel and plastic drums and shared services	2	1
Brazil	Steel and plastic drums and intermediate bulk containers	5	3
Canada	Steel and plastic drums	2	—
Chile	Steel drums, water bottles, and warehouse	1	1
China	Steel and plastic drums, intermediate bulk containers, closures, and packaging services	8	2
Colombia	Steel drums, intermediate bulk containers, and water bottles	1	1
Costa Rica	Steel drums	—	1
Czech Republic	Steel drums	1	—
Denmark	Fibre drums	—	1
Egypt	Steel drums	—	1
France	Steel and plastic drums, closures, reconditioned containers, intermediate bulk containers and warehouse	4	1
Germany	Steel and plastic drums, closures, reconditioned containers and services and intermediate bulk containers	5	1
Greece	Steel drums	1	—
Guatemala	Steel drums	1	—
Hungary	Steel drums and shared services	1	1
Israel	Steel, plastic and fibre drums and intermediate bulk containers	—	1
Italy	Steel and plastic drums, closures, intermediate bulk containers and distribution center	1	3
Kenya	Steel drums	—	1
Malaysia	Steel and plastic drums	1	1
Mexico	Fibre, steel and plastic drums, closures and warehouse	1	3
Morocco	Steel and plastic drums	1	—
Netherlands	Steel drums, closures, paints and linings, research center, general offices, distribution center, reconditioned containers and services and intermediate bulk containers	4	1
Nigeria	Steel drums	1	—
Norway	Office	—	1
Philippines	Steel drums and water bottles	—	1
Poland	Steel drums and water bottles	1	—
Portugal	Steel drums	1	—
Russia		7	3

Steel drums, water bottles, intermediate bulk containers and general office

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Saudi Arabia	Steel drums	—	2
Singapore	Steel and plastic drums	—	1
South Africa	Steel and plastic drums	2	1
Spain	Steel drums and closures	2	2
Sweden	Steel and plastic drums and intermediate bulk containers	1	1
Turkey	Steel drums	1	—
Ukraine	Distribution center and water bottles	—	1
United Kingdom	Steel drums, reconditioned containers, and intermediate bulk containers	2	—
United States	Fibre, steel and plastic drums, intermediate bulk containers, reconditioned containers, closures, and packaging services	19	25
Venezuela	Idle	2	—
Vietnam	Steel drums	1	—

Location	Products or Use	Owned	Leased
FLEXIBLE PRODUCTS & SERVICES:			
Belgium	Manufacturing plant	—	1
Brazil	General office	—	1
Chile	General office	—	1
China	Manufacturing plant	—	1
France	Manufacturing plant	1	—
Germany	General offices and warehouse	—	2
India	General office	—	1
Ireland	Distribution center	—	1
Mexico	Manufacturing plant	—	1
Netherlands	General offices and warehouse	—	2
Portugal	Manufacturing plant	—	1
Romania	Manufacturing plants	—	2
Saudi Arabia	Idle	1	—
Turkey	Manufacturing plants	—	3
Ukraine	Manufacturing plant	1	—
United Kingdom	Manufacturing plant	—	1
United States	General offices	—	2
Vietnam	Manufacturing plant	—	1

Location	Products or Use	Owned	Leased
PAPER PACKAGING & SERVICES:			
United States	Corrugated sheets, containers and other products, containerboard, general offices and distribution centers	15	3

Location	Products or Use	Owned	Leased
LAND MANAGEMENT:			
United States	General offices	3	2

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Location	Products or Use	Owned	Leased
CORPORATE:			
Luxembourg	General office	—	1
Netherlands	General office	—	1
United States	Principal and general offices	4	—

We also own a substantial amount of timber properties. Our timber properties consisted of approximately 243,000 acres in the southeastern United States as of October 31, 2018.

ITEM 3. LEGAL PROCEEDINGS

We are not a party to any pending legal proceedings that are material to our business or financial condition.

From time to time, we have been a party to legal proceedings arising at the country, state or local level involving environmental sites to which we have shipped, directly or indirectly, small amounts of toxic waste, such as paint solvents. As of the filing date of this Form 10-K, we have been classified only as a "de minimis" participant in such proceedings. Except as described in the following paragraphs, we are not a party to any legal proceedings involving a governmental authority and arising under any federal, state or local provisions that have been enacted or adopted regulating the discharge of materials into the environment or primarily for the purpose of protecting the environment and involving potential monetary sanctions in excess of $100,000.

On July 19, 2017, the Wisconsin Department of Natural Resources ("WDNR") issued Notices of Violation to us and CLCM with respect to CLCM's three reconditioning facilities in the Milwaukee, Wisconsin area regarding violations of Wisconsin laws related to hazardous waste, air management and industrial storm water. On November 27, 2017, the United States Environmental Protection Agency ("U.S. EPA") issued a Notice of Violation to us and CLCM with respect to CLCM's reconditioning facilities in the Milwaukee, Wisconsin area regarding violations of the federal Resource Conservation and Recovery Act ("RCRA"), primarily related to the unlawful storage and treatment of hazardous wastes without RCRA licenses and violations of RCRA's requirements related to hazardous waste determinations and hazardous waste activity notifications, and Wisconsin laws related to hazardous waste. On November 27, 2017, the U.S. EPA issued Notices and Findings of Violations to CLCM with respect to two of CLCM's reconditioning facilities in the Milwaukee, Wisconsin area regarding violations of the federal Clean Air Act, primarily related to air management, and Wisconsin laws related to air management. The remedies being sought in these proceedings include compliance with the applicable environmental laws and regulations as being interpreted by the U.S. EPA and WDNR and monetary sanctions. We have cooperated with the governmental agencies in these investigations and proceedings. As of the filing date of this Form 10-K, no citations have been issued or fines assessed with respect to any of these proceedings. With respect to one or more of these proceedings, monetary sanctions may be imposed by the U.S. EPA or the WNDR and those monetary sanctions may exceed $100,000 individually or in the aggregate.

On September 17, 2014, the State of Illinois (the "State") filed suit against Olympic Oil Ltd. ("Olympic"), which at that time was owned by our subsidiary Delta Petroleum Company, Inc. ("Delta"), in the Circuit Court, Chancery Division, of Cook County, Illinois. The lawsuit involved alleged releases of petroleum products and ethylene glycol from Olympic's facility in Stickney, Illinois. In 2015, Delta sold its ownership interest in Olympic, but agreed to indemnify Olympic for investigation and remediation costs and any civil penalties related to these alleged releases. In 2017, Delta and Greif, Inc. were added as defendants to the lawsuit. This matter went to trial in October 2018, and the court entered a judgment on November 16, 2018, denying the State's request for an injunction for further investigation or remediation of the facility, but finding Olympic and Delta liable for certain statutory violations, assessing penalties of $227,000 and allowing the State's request for reimbursement of court costs. Greif, Inc. was found not liable by the court.

ITEM 4. MINE SAFETY DISCLOSURES

None.

PART II

ITEM 5. MARKET FOR THE REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

Shares of our Class A and Class B Common Stock are listed on the New York Stock Exchange under the symbols GEF and GEF.B, respectively.

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Financial information regarding our two classes of common stock, as well as the number of holders of each class and the high, low and closing sales prices for each class for each quarterly period for the two most recent years, is included in Note 19 of the Notes to Consolidated Financial Statements in Item 8 of this Form 10-K.

We pay quarterly dividends of varying amounts computed on the basis described in Note 14 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K. The annual dividends paid for the last two years are as follows:

2018 Dividends per Share – Class A $1.70; Class B $2.54

2017 Dividends per Share – Class A $1.68; Class B $2.51

The terms of our current credit agreement limit our ability to make “restricted payments,” which include dividends and purchases, redemptions and acquisitions of our equity interests. The payment of dividends and other restricted payments are subject to the condition that certain defaults not exist under the terms of our current credit agreement and, in the event that certain defaults exist, are limited in amount by a formula based, in part, on our consolidated net income. Refer to “Liquidity and Capital Resources – Borrowing Arrangements” in Item 7 of this Form 10-K.

In July 2017, the Board of Directors' Stock Repurchase Committee authorized and we executed the repurchase of 2,000 shares of Class B Common Stock as a part of the Board authorized common stock repurchase program. No stock has been repurchased during fiscal year 2018.

Performance Graph

The following graph compares the performance of shares of our Class A and B Common Stock to that of the Standard and Poor’s 500 Index and our industry group (Peer Index) assuming $100 invested on October 31, 2013 and reinvestment of dividends for each subsequent year. The graph does not purport to represent our value.

The Peer Index comprises the containers and packaging index as shown by Dow Jones.

Equity compensation plan information required by Items 201(d) of Regulation S-K will be found under the caption “Equity Compensation Plan Information” in the 2019 Proxy Statement, which information is incorporated herein by reference.

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ITEM 6. SELECTED FINANCIAL DATA

The five-year selected financial data is as follows:

	Year Ended October 31,				
(in millions, except per share amounts)	2018	2017	2016	2015	2014
Net sales	$3,873.8	$3,638.2	$3,323.6	$3,616.7	$4,239.1
Net income attributable to Greif, Inc.	$209.4	$118.6	$74.9	$71.9	$91.5
Total assets	$3,194.8	$3,232.3	$3,153.0	$3,315.7	$3,667.4
Long-term debt, including current portion of long-term debt	$907.6	$952.8	$974.6	$1,146.9	$1,105.0
Basic earnings per share:					
Class A Common Stock	$3.56	$2.02	$1.28	$1.23	$1.56
Class B Common Stock	$5.33	$3.02	$1.90	$1.83	$2.33
Diluted earnings per share:					
Class A Common Stock	$3.55	$2.02	$1.28	$1.23	$1.56
Class B Common Stock	$5.33	$3.02	$1.90	$1.83	$2.33
Dividends per share:					
Class A Common Stock	$1.70	$1.68	$1.68	$1.68	$1.68
Class B Common Stock	$2.54	$2.51	$2.51	$2.51	$2.51

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The terms "Greif," the "Company," "we," "us" and "our" as used in this discussion refer to Greif, Inc. and its subsidiaries.

RESULTS OF OPERATIONS

The discussion and analysis of our financial condition and results of operations are based upon our consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States ("GAAP"). The preparation of these consolidated financial statements, in accordance with these principles, require us to make estimates and assumptions that affect the reported amount of assets and liabilities, revenues and expenses, and related disclosure of contingent assets and liabilities at the date of our consolidated financial statements.

Historical revenues and earnings may or may not be representative of future operating results due to various economic and other factors.

The non-GAAP financial measure of EBITDA is used throughout the following discussion of our results of operations. EBITDA is defined as net income, plus interest expense, net, plus income tax expense, plus depreciation, depletion and amortization. Since we do not calculate net income by segment, EBITDA by segment is reconciled to operating profit by segment. We use EBITDA as one of the financial measures to evaluate our historical and ongoing operations and believe that this non-GAAP financial measure is useful to enable investors to perform meaningful comparisons of our historical and current performance. Additionally, EBITDA is a metric considered by debt holders and certain investors as an indicator of our ability to generate cash flow. EBITDA, as a non-GAAP financial measure, should not be considered an alternative or substitute for, and should not be considered superior to, any of our GAAP financial measures. Accordingly, users of this financial information should not place undue reliance on EBITDA.

The following table sets forth the net sales, operating profit (loss) and EBITDA for each of our business segments for 2018, 2017 and 2016:

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Year Ended October 31, (in millions)	2018	2017	2016
Net sales			
Rigid Industrial Packaging & Services	$2,623.6	$2,522.7	$2,324.2
Paper Packaging & Services	898.5	800.9	687.1
Flexible Products & Services	324.2	286.4	288.1
Land Management	27.5	28.2	24.2
Total net sales	$3,873.8	$3,638.2	$3,323.6
Operating profit (loss):			
Rigid Industrial Packaging & Services	$183.2	$190.1	$143.9
Paper Packaging & Services	158.3	93.5	89.1
Flexible Products & Services	19.4	5.8	(15.5)
Land Management	9.6	10.1	8.1
Total operating profit	$370.5	$299.5	$225.6
EBITDA:			
Rigid Industrial Packaging & Services	$249.0	$241.9	$223.8
Paper Packaging & Services	191.8	115.3	120.7
Flexible Products & Services	25.7	11.1	(11.3)
Land Management	14.2	14.6	11.9
Total EBITDA	$480.7	$382.9	$345.1

The following table sets forth EBITDA, reconciled to net income and operating profit, for our consolidated results for 2018, 2017 and 2016:

Year Ended October 31, (in millions)	2018	2017	2016
Net income	$229.5	$135.1	$75.5
Plus: Interest expense, net	51.0	60.1	75.4
Plus: Income tax expense	73.3	67.2	66.5
Plus: Depreciation, depletion and amortization expense	126.9	120.5	127.7
EBITDA	$480.7	$382.9	$345.1
Net income	$229.5	$135.1	$75.5
Plus: Interest expense, net	51.0	60.1	75.4
Plus: Income tax expense	73.3	67.2	66.5
Plus: Non-cash pension settlement charge	1.3	27.1	—
Plus: Other expense, net	18.4	12.0	9.0
Plus: Equity earnings of unconsolidated affiliates, net of tax	(3.0)	(2.0)	(0.8)
Operating profit	370.5	299.5	225.6
Less: Non-cash pension settlement charge	1.3	27.1	—
Less: Other expense, net	18.4	12.0	9.0
Less: Equity earnings of unconsolidated affiliates, net of tax	(3.0)	(2.0)	(0.8)
Plus: Depreciation, depletion and amortization expense	126.9	120.5	127.7
EBITDA	$480.7	$382.9	$345.1

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The following table sets forth EBITDA for each of our business segments, reconciled to the operating profit for each segment, for 2018, 2017 and 2016:

Year Ended October 31, (in millions)	2018	2017	2016
Rigid Industrial Packaging & Services			
Operating profit	$183.2	$190.1	$143.9
Less: Non-cash pension settlement charge	1.3	16.7	—
Less: Other expense, net	17.1	10.5	5.5
Less: Equity earnings of unconsolidated affiliates, net of tax	(3.0)	(2.0)	(0.8)
Plus: Depreciation and amortization expense	81.2	77.0	84.6
EBITDA	$249.0	$241.9	$223.8
Paper Packaging & Services			
Operating profit	$158.3	$93.5	$89.1
Less: Non-cash pension settlement charge	—	10.2	—
Less: Other expense (income), net	0.7	(0.1)	—
Plus: Depreciation and amortization expense	34.2	31.9	31.6
EBITDA	$191.8	$115.3	$120.7
Flexible Products & Services			
Operating profit (loss)	$19.4	$5.8	$(15.5)
Less: Non-cash pension settlement charge	—	0.1	—
Less: Other expense, net	0.6	1.6	3.5
Plus: Depreciation and amortization expense	6.9	7.0	7.7
EBITDA	$25.7	$11.1	$(11.3)
Land Management			
Operating profit	$9.6	$10.1	$8.1
Less: Non-cash pension settlement charge	—	0.1	—
Plus: Depreciation, depletion and amortization expense	4.6	4.6	3.8
EBITDA	14.2	14.6	11.9
Consolidated EBITDA	$480.7	$382.9	$345.1

Year 2018 Compared to Year 2017

Net Sales

Net sales were $3,873.8 million for 2018 compared with $3,638.2 million for 2017. The 6.5 percent increase was due primarily to strategic pricing decisions and contractual price changes in our Rigid Industrial Packaging & Services segment, increases in selling prices due to increases in published containerboard pricing and an increase in sales volumes in our Paper Packaging & Services segment, and strategic pricing decisions and product mix in our Flexible Products & Services segment, partially offset by volume declines due to customer operational interruptions, weather and strategic pricing decisions in our Rigid Industrial Packaging & Services segment.

Gross Profit

Gross profit was $788.9 million for 2018 compared with $714.7 million for 2017. The respective reasons for the improvement or decline in gross profit, as the case may be, for each segment are described below in the "Segment Review." Gross profit margin was 20.4 percent for 2018 compared to 19.6 percent for 2017.

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Selling, General and Administrative Expenses

Selling, general and administrative ("SG&A") expenses increased 4.6 percent to $397.9 million for 2018 from $380.4 million for 2017. This increase was primarily due to increased health and medical expenses, increased non-income taxes and increased salary expenses. SG&A expenses were 10.3 percent of net sales for 2018 compared with 10.5 percent of net sales for 2017.

Restructuring Charges

Restructuring charges were $18.6 million for 2018 compared with $12.7 million for 2017. Refer to Note 6 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K for additional information.

Impairment Charges

There were no goodwill impairment charges for 2018 compared with $13.0 million for 2017. The 2017 charges were related to the impairment of goodwill within the Rigid Industrial Packaging & Services segment.

Non-cash asset impairment charges were $8.3 million for 2018 compared with $7.8 million for 2017. In 2018, these charges were primarily related to plant closures and impairments of goodwill allocated to assets held for sale. Refer to Note 9 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K for additional information.

Gain on Disposal of Properties, Plants and Equipment, net

The gain on disposal of properties, plants, and equipment, net was $5.6 million and $0.4 million for 2018 and 2017, respectively. See Note 4 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K for additional information.

(Gain) Loss on Disposal of Businesses, net

The gain on disposal of business, net was $0.8 million for 2018 and the loss on disposal of business, net was $1.7 million for 2017. See Note 2 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K for additional information.

Operating Profit

Operating profit was $370.5 million for 2018 compared with $299.5 million for 2017. The $71.0 million increase consisted of a $64.8 million increase in the Paper Packaging & Services segment and a $13.6 million increase in the Flexible Products & Services segment, partially offset by a $0.5 million decrease in the Land Management segment and a $6.9 million decrease in the Rigid Industrial Packaging & Services segment. When compared to 2017, the primary factors that contributed to the $71.0 million increase in operating profit were increased gross profit of $74.2 million, increased gains on disposal of properties, plants and equipment and businesses, net of $7.7 million and decreased impairment charges of $12.5 million, offset by increased restructuring charges of $5.9 million and increased SG&A expenses of $17.5 million.

EBITDA

EBITDA was $480.7 million and $382.9 million for 2018 and 2017, respectively. The $97.8 million increase in EBITDA was primarily due to the same factors that impacted operating profit, as described above, in addition to a reduction of $25.8 million in pension settlement charges. Depreciation, depletion and amortization expense was $126.9 million for 2018 compared with $120.5 million for 2017.

Trends

In 2019, we anticipate the global macroeconomic conditions to remain choppy depending on the regions and end use segments. While we expect positive demand patterns to continue in North America, we anticipate continued softness in Western Europe, parts of South America and, on a relative basis, China, which will impact our Rigid Industrial Packaging & Services business segment. We also anticipate that our Paper Packaging & Services business segment will benefit from a full year of containerboard price increases announced in 2018 and expansion projects that we have announced. Currency exchange rates are anticipated to continue to be volatile and provide headwinds for our Rigid Industrial Packaging & Services business segment, although raw material prices for steel, resin and old corrugated containers are expected to remain relatively stable in 2019, which will benefit our manufacturing business segments. The foregoing discussion of 2019 trends in our businesses does not consider the impact of our proposed acquisition of Caraustar. See Item 1(g) of this Form 10-K, Recent Events - Proposed Acquisition of Caraustar, for information concerning this proposed acquisition.

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Segment Review

Rigid Industrial Packaging & Services

Key factors influencing profitability in the Rigid Industrial Packaging & Services segment are:

- Selling prices, product mix, customer demand and sales volumes;
- Raw material costs, primarily steel, resin, containerboard and used industrial packaging for reconditioning;
- Energy and transportation costs;
- Benefits from executing the Greif Business System;
- Restructuring charges;
- Divestiture of businesses and facilities; and
- Impact of foreign currency translation.

Net sales increased 4.0 percent to $2,623.6 million in 2018 from $2,522.7 million in 2017. The $100.9 million increase in net sales was primarily the result of an increase in selling prices due to strategic pricing decisions, contractual price changes and a $18.9 million impact of foreign currency translation, partially offset by volume declines due to customer operational interruptions, weather and strategic pricing decisions.

Gross profit was $490.8 million for 2018 compared with $502.2 million for 2017. The $11.4 million decrease in gross profit was primarily due to increased raw material costs, increased manufacturing expenses and the timing of contractual price changes. Gross profit margin decreased to 18.7 percent in 2018 from 19.9 percent in 2017.

Operating profit was $183.2 million for 2018 compared with $190.1 million for 2017. The $6.9 million decrease was primarily attributable to the same factors impacting gross profit as well as increases in restructuring charges of $6.1 million and increases in SG&A expenses of $8.9 million, partially offset by an increase in gain on disposal of properties, plants, equipment and businesses, net of $7.3 million and decreased impairment charges of $12.2 million. The $8.9 million increase in SG&A related to increased allocated corporate costs and increased non-income taxes.

EBITDA was $249.0 million for 2018 compared with $241.9 million for 2017. The $7.1 million increase was due to the same factors that impacted the segment's operating profit, as described above, in addition to a reduction of $15.4 million in pension settlement charges. Depreciation, depletion and amortization expense was $81.2 million for 2018 compared with $77.0 million for 2017.

Paper Packaging & Services

Key factors influencing profitability in the Paper Packaging & Services segment are:

- Selling prices, product mix, customer demand and sales volumes;
- Raw material costs, primarily old corrugated containers;
- Energy and transportation costs; and
- Benefits from executing the Greif Business System.

Net sales increased 12.2 percent to $898.5 million for 2018 compared with $800.9 million for 2017, primarily due to increased published containerboard prices and increased sales volumes.

Gross profit was $222.5 million for 2018 compared with $150.9 million for 2017. Gross profit margin was 24.8 percent and 18.8 percent for 2018 and 2017, respectively. The increase in gross profit and gross profit margin was due primarily to higher containerboard sales prices and lower old corrugated container input costs, partially offset by increased transportation costs.

Operating profit was $158.3 million for 2018 compared with $93.5 million for 2017. The increase was primarily due to the same factors that impacted gross profit, partially offset by an increase in SG&A expenses of $6.7 million due to an increase in allocated corporate costs and an increase in salaries and benefits expenses as a result of business performance.

EBITDA was $191.8 million for 2018 compared with $115.3 million for 2017. The increase was due primarily to the same factors that impacted the segment's operating profit, as described above, in addition to a reduction of $10.2 million in pension settlement charges. Depreciation, depletion and amortization expense was $34.2 million and $31.9 million for 2018 and 2017, respectively.

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Flexible Products & Services

Key factors influencing profitability in the Flexible Products & Services segment are:

- Selling prices, product mix, customer demand and sales volumes;
- Raw material costs, primarily resin;
- Energy and transportation costs;
- Benefits from executing the Greif Business System;
- Restructuring charges;
- Divestiture of businesses and facilities; and
- Impact of foreign currency translation.

Net sales increased 13.2 percent to $324.2 million for 2018 compared with $286.4 million for 2017. The increase was due primarily to product mix, strategic pricing decisions, volume increases, and a $12.3 million impact of foreign currency translation.

Gross profit was $65.2 million for 2018 compared with $51.1 million for 2017. The increase was primarily attributable to the same factors that impacted net sales and improved transportation and manufacturing efficiencies, which also contributed to the increase in gross profit margin to 20.1 percent for 2018 from 17.8 percent for 2017.

Operating profit was $19.4 million for 2018 compared with $5.8 million for 2017. The increase was primarily related to the same factors impacting gross profit, partially offset by an increase in SG&A expenses of $1.7 million primarily due to an increase in allocated corporate costs and an increase in salaries and benefits expenses as a result of business performance.

EBITDA was $25.7 million for 2018 compared with $11.1 million for 2017. The increase was due to the same factors that impacted the segment’s operating profit, as described above. Depreciation, depletion and amortization expense was $6.9 million for 2018 compared with $7.0 million for 2017, respectively.

Land Management

As of October 31, 2018, our Land Management segment consisted of 243,000 acres of timber properties in the southeastern United States. Key factors influencing profitability in the Land Management segment are:

- Planned level of timber sales;
- Selling prices and customer demand;
- Gains on timberland sales; and
- Gains on the disposal of development, surplus and HBU properties (“special use property”).

In order to maximize the value of our timber properties, we continue to review our current portfolio and explore the development of certain of these properties. This process has led us to characterize our property as follows:

- Surplus property, meaning land that cannot be efficiently or effectively managed by us, whether due to parcel size, lack of productivity, location, access limitations or for other reasons.
- HBU property, meaning land that in its current state has a higher market value for uses other than growing and selling timber.
- Development property, meaning HBU land that, with additional investment, may have a significantly higher market value than its HBU market value.
- Core timberland, meaning land that is best suited for growing and selling timber.

We report the sale of timberland property in "timberland gains," the sale of HBU and surplus property in “gain on disposal of properties, plants and equipment, net” and the sale of timber and development property under “net sales” and “cost of products sold" in our consolidated statements of income. All HBU and development property, together with surplus property, is used to productively grow and sell timber until the property is sold.

Whether timberland has a higher value for uses other than growing and selling timber is a determination based upon several variables, such as proximity to population centers, anticipated population growth in the area, the topography of the land, aesthetic considerations, including access to lakes or rivers, the condition of the surrounding land, availability of utilities, markets for timber

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and economic considerations both nationally and locally. Given these considerations, the characterization of land is not a static process, but requires an ongoing review and re-characterization as circumstances change.

As of October 31, 2018, we estimated that there were 17,900 acres in the United States of special use property, which we expect will be available for sale in the next five to seven years.

Net sales decreased to $27.5 million for 2018 compared with $28.2 million for 2017.

Operating profit decreased to $9.6 million for 2018 from $10.1 million for 2017.

EBITDA was $14.2 million and $14.6 million for 2018 and 2017, respectively. Depreciation, depletion and amortization expense was $4.6 million for 2018 and 2017.

Other Income Statement Changes

Interest Expense, net

Interest expense, net was $51.0 million and $60.1 million for 2018 and 2017, respectively. The decrease was primarily due to the repayment of our Senior Notes due February 2017 with funds borrowed under our new senior secured credit agreement (the “2017 Credit Agreement”), lower long term debt balances, and lower interest rates resulting from the impact of our derivative financial instruments.

Other Expense, net

Other expense, net was $18.4 million and $12.0 million for 2018 and 2017, respectively. The increase was primarily due to other components of net benefit cost, $5.9 million, which are required to be present outside of income from operations, as a result of our adoption of ASU 2017-07. Refer to Note 1 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K for additional information.

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U.S. and Non-U.S. Income before Income Tax Expense

Refer to the following tables for details of the U.S. and non-U.S. income before income taxes and U.S. and non-U.S. income before income taxes after eliminating the impact of non-cash asset impairment charges, non-cash pension settlement charges, restructuring charges, and (gains) losses on sales of businesses.

Summary

	Year ended October 31, 2018	2017
Non-U.S. % of Consolidated Net Sales	51.4 %	51.1 %
U.S. % of Consolidated Net Sales	48.6 %	48.9 %
	100.0 %	100.0 %
Non-U.S. % of Consolidated I.B.I.T.	34.1 %	42.6 %
U.S. % of Consolidated I.B.I.T.	65.9 %	57.4 %
	100.0 %	100.0 %
Non-U.S. % of Consolidated I.B.I.T. before Special Items	36.9 %	43.5 %
U.S. % of Consolidated I.B.I.T. before Special Items	63.1 %	56.5 %
	100.0 %	100.0 %

Non-U.S. I.B.I.T. Reconciliation

	Year ended October 31, 2018	2017
Non-U.S. I.B.I.T.	$102.3	$85.2
Non-cash asset impairment charges	4.6	2.2
Goodwill impairment charges	—	13.0
Non-cash pension settlement charge	1.3	1.2
Restructuring charges	13.5	10.8
(Gain) loss on sale of businesses	(0.8)	1.7
Total Non-U.S. Special Items	18.6	28.9
Non-U.S. I.B.I.T. before Special Items	$120.9	$114.1

U.S. I.B.I.T. Reconciliation

	Year ended October 31, 2018	2017
U.S. I.B.I.T.	$197.5	$115.1
Non-cash asset impairment charges	3.7	5.6
Non-cash pension settlement charge	—	25.9
Restructuring charges	5.1	1.9
Total U.S. Special Items	8.8	33.4
U.S. I.B.I.T. before Special Items	$206.3	$148.5

*Income Before Income Tax expense = I.B.I.T.

Income Tax Expense

We had operations in over 40 countries during 2018. Operations outside the United States are subject to additional risks that may not exist, or be as significant, within the United States. Because of our global operations in numerous countries we are required to address different and complex tax systems and issues which are constantly changing.

Preparation of our financial statements requires the use of estimates and assumptions that affect the reported amounts of our assets and liabilities; and revenues and expenses as of the balance sheet date. The numerous tax jurisdictions in which we operate, along

with the variety and complexity of the various tax laws, creates a level of uncertainty, and requires judgment when addressing the impact of complex tax issues. Our effective tax rate and the amount of tax expense are dependent upon various factors, including the following: the tax laws of the jurisdictions in which income is earned; the ability to realize deferred tax assets at certain international subsidiaries; negotiation and dispute resolution with taxing authorities in the U.S. and international jurisdictions; and changes in tax laws.

The provision for income taxes is computed using the asset and liability method under this method, deferred tax assets and liabilities are recognized currently based on the anticipated future tax consequences of changes in the temporary differences between the book and tax bases of assets and liabilities. This method includes an estimate of the future realization of tax benefits associated with tax losses. Deferred tax assets and liabilities are measured using the currently enacted tax rates that apply to taxable income in effect for the years in which those assets are expected to be realized or settled.

Income tax expense for 2018 was $73.3 million on $299.8 million of pretax income and for 2017 was $67.2 million on $200.3 million of pretax income. For 2018, the reduction of the statutory federal corporate income tax rate due to the enactment of the Tax Cuts and Jobs Act of 2017 (the “Tax Reform Act”), as well as the mix of income and losses among various jurisdictions, resulted in a net tax increase of $18.7 million on pre-tax income of $99.5 million. Additionally, there was an $11.0 million year-over-year increase in tax expense related to changes in the measurement of uncertain tax positions, offset by decreases related to audit settlements and the expiration of the statute of limitations. Further, there was a year-over-year $1.9 million increase in withholding tax expense. These year-over-year tax increases were offset by year-over-year decreases of $5.1 million related to unremitted foreign earnings and $1.2 million for other small tax expense items, along with, most significantly, a $19.2 million decrease in the 2018 tax expense related to the net provisional tax benefit related to the Tax Reform Act. The net provisional tax benefit included tax benefits of $72.0 million resulting from the revaluation of deferred tax assets and liabilities, which were partially offset by $52.8 million of transition tax expense.

During 2018, there was a $24.8 million net increase in valuation allowances. This increase was a result of a $30.2 million increase to valuation allowances related to net operating losses and other deferred tax assets, as well as an increase of $0.6 million in new valuation allowances. These increases were partially offset by a $6.0 million decrease in valuation allowances due to currency translation.

The SEC staff issued Staff Accounting Bulletin No. 118 (“SAB 118”) to address the application of GAAP in situations when a registrant does not have the necessary information available, prepared, or analyzed (including computations) in reasonable detail to complete the accounting for certain income tax effects of the Tax Reform Act. SAB 118 also provides for a measurement period that should not extend beyond one year from the Tax Reform Act enactment date. As of October 31, 2018, our accounting for the Tax Reform Act was provisional. However, in accordance with SAB 118, we have recorded a reasonable estimate for the following items: a tax benefit related to the revaluation of deferred tax assets and liabilities of $72.0 million; and a provisional tax expense as a result of the accrual for the transition tax liability of $52.8 million. As a result, the net provisional tax benefit recorded in our consolidated financial statements for the year ended October 31, 2018 was $19.2 million. Adjustments to the provisional estimates will be recorded and disclosed prospectively during the measurement period and may differ from these provisional amounts, due to, among other matters, additional analyses, changes in interpretations and assumptions we have made, additional regulatory guidance that may be issued, and actions we may take as a result of the Tax Reform Act.

We analyze potential income tax liabilities related to uncertain tax positions in the United States and international jurisdictions. The analysis of potential income tax liabilities results in estimates of income tax liabilities recognized for uncertain tax positions following the guidance of ASC 740, “Income Taxes.” The estimation of potential tax liabilities related to uncertain tax positions involves significant judgment in evaluating the impact of uncertainties in the application of ASC 740 and complex tax laws. We periodically analyze both potential income tax liabilities and existing liabilities for uncertain tax positions resulting in both new reserves and adjustments to existing reserves in light of changing facts and circumstances. This includes the release of existing liabilities for uncertain tax positions based on the expiration of statutes of limitation. During 2018, recognition of uncertain tax positions increased primarily due to increases in unrecognized tax benefits related to prior years and the current year, offset by decreases related to lapse in statute of limitations; whereas in 2017, the uncertain tax positions decreased primarily due to audit and statute of limitations releases attributable to non-US jurisdictions.

The ultimate resolution of potential income tax liabilities may result in a payment that is materially different from our current estimates. If our estimates recognized under ASC 740 prove to be different than what is ultimately resolved, such resolution could have a material impact on our financial condition and results of operations. While predicting the final outcome or the timing of the resolution of any particular tax matter is subject to various risks and uncertainties, we believe that our tax accounts related to uncertain tax positions are appropriately stated.

Refer to Note 11 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K for further information.

Equity Earnings of Unconsolidated Affiliates, net of Tax

We recorded $3.0 million and $2.0 million of equity earnings of unconsolidated affiliates, net of tax, for 2018 and 2017, respectively.

Net Income Attributable to Noncontrolling Interests

Net income attributable to noncontrolling interests represents the portion of earnings from the operations of our non-wholly owned, consolidated subsidiaries that belongs to the noncontrolling interests in those subsidiaries. Net income attributable to noncontrolling interests was $20.1 million and $16.5 million for 2018 and 2017, respectively. The increase in net income attributable to noncontrolling interests was due primarily to increased earnings of the Flexible Packaging JV.

Net Income Attributable to Greif, Inc.

Based on the factors noted above, net income attributable to Greif, Inc. increased $90.8 million to $209.4 million in 2018 from $118.6 million in 2017.

Year 2017 Compared to Year 2016

Net Sales

Net sales were $3,638.2 million for 2017 compared with $3,323.6 million for 2016. The 9.5 percent increase in net sales was primarily due to strategic pricing decisions and increases in index prices in our Rigid Industrial Packaging & Services segment and an increase in volumes in our mills and corrugator facilities in our Paper Packaging & Services segment, partially offset by the impact of our 2016 divestitures in our Rigid Industrial Packaging & Services segment.

Gross Profit

Gross profit was $714.7 million for 2017 compared with $684.9 million for 2016. The respective reasons for the improvement or decline in gross profit for each segment are described below in the "Segment Review." Gross profit margin was 19.6 percent for 2017 compared to 20.6 percent for 2016.

Selling, General and Administrative Expenses

SG&A expenses increased 0.9 percent to $380.4 million for 2017 from $376.8 million for 2016. This increase was primarily due to increases in incentive compensation due to improved business performance and increases in professional fees partially offset by decreased non-income tax expense and the impact of foreign currency translation of $2.9 million. SG&A expenses were 10.5 percent of net sales for 2017 compared with 11.3 percent of net sales for 2016.

Restructuring Charges

Restructuring charges were $12.7 million for 2017 compared with $26.9 million for 2016. Charges for both periods were primarily related to employee separation costs, relocation fees and professional fees incurred for services specifically associated with employee separation and relocation. Restructuring activities and associated costs during 2017 are anticipated to deliver annual run-rate savings of approximately $9.9 million with payback periods ranging from one to three years among the plans. We anticipate completion of the current restructuring programs by early 2018. Refer to Note 6 to Consolidated Financial Statements included in Item 8 of this Form 10-K for additional information.

Impairment Charges

Goodwill impairment charges were $13.0 million for 2017. These charges were related to the impairment of goodwill within the Rigid Industrial Packaging & Services segment. There were no goodwill impairment charges for 2016. Non-cash asset impairment charges were $7.8 million for 2017 compared with $51.4 million for 2016. In 2017, these charges were primarily related to plant closures and impairments of goodwill allocated to assets held for sale. Refer to Note 9 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K for additional information.

Gain on Disposal of Properties, Plants and Equipment, net

The gain on disposal of properties, plants, and equipment, net was $0.4 million and $10.3 million for 2017 and 2016, respectively. See Note 4 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K for additional information.

Loss on Disposal of Businesses, net

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The loss on disposal of businesses was $1.7 million and $14.5 million for 2017 and 2016, respectively. See Note 2 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K for additional information.

Operating Profit

Operating profit was $299.5 million for 2017 compared with $225.6 million for 2016. The $73.9 million increase consisted of increases of $46.2 million in the Rigid Industrial Packaging & Services segment, $4.4 million in the Paper Packaging & Services segment, $21.3 million in the Flexible Products & Services segment, and $2.0 million in the Land Management segment. The primary factors that contributed to the $73.9 million increase, when compared to 2016, were increased sales, lower non-cash asset impairment charges of $30.6 million, lower restructuring charges of $14.2 million, and lower losses on the sale of businesses of $12.8 million, partially offset by lower gains on sales of property, plant, and equipment of $9.9 million.

EBITDA

EBITDA was $382.9 million and $345.1 million for 2017 and 2016, respectively. The increase in EBITDA was primarily due to the same factors impacting operating profit described above. Depreciation, depletion and amortization expense was $120.5 million for 2017 compared with $127.7 million for 2016. The decrease in depreciation, depletion and amortization expense was primarily due to impact of 2016 divestitures.

Segment Review

Rigid Industrial Packaging & Services

Net sales increased 8.5 percent to $2,522.7 million in 2017 from $2,324.2 million in 2016. The $198.5 million increase in net sales was primarily the result of an increase in selling prices due to strategic pricing and increases in index prices of raw materials partially offset by the impact of the 2016 divestitures in this segment.

Gross profit was $502.2 million for 2017 compared with $489.4 million for 2016. The $12.8 million increase in gross profit was primarily due to the positive impact of strategic volume and pricing actions, partially offset by increases in raw material prices. Gross profit margin decreased to 19.9 percent from 21.1 percent in 2016.

Operating profit was $190.1 million for 2017 compared with $143.9 million for 2016. The $46.2 million increase was primarily attributable to the same factors impacting gross profit, a decrease in non-cash asset impairment charges of $22.8 million, a decrease in restructuring charges of $7.8 million and a decrease in loss on sales of properties, plants and equipment and businesses, net of $3.2 million.

EBITDA was $241.9 million for 2017 compared with $223.8 million for 2016. The $18.1 million increase was due to the same factors that impacted the segment’s operating profit, as described above. Depreciation, depletion and amortization expense was$77.0 million for 2017 compared with $84.6 million for 2016. The reduction in depreciation, depletion and amortization expense was primarily due to impact of 2016 divestitures.

Paper Packaging & Services

Net sales increased 16.6 percent to $800.9 million for 2017 compared with $687.1 million for 2016, primarily related to increased net volumes of 5.9 percent in our mills and corrugator facilities and a $22.7 million increase in specialty product sales. Selling prices increased 12.0 percent, primarily due to an increase in published containerboard index prices during 2017.

Gross profit was $150.9 million for 2017 compared with $144.5 million for 2016. The increase in gross profit was primarily due to the same factors impacting net sales, as described above. Gross profit margin was 18.8 percent and 21.0 percent for 2017 and 2016, respectively. This decrease was due to an increase in input costs, primarily old corrugated container costs, during 2017 compared to 2016.

Operating profit was $93.5 million for 2017 compared with $89.1 million for 2016. The increase was primarily due to the selling price and volume increases as described above, partially offset by increased input costs and increased SG&A expenses.

EBITDA was $115.3 million for 2017 compared with $120.7 million for 2016. The decrease in EBITDA was primarily due to the same factors impacting net sales and gross profit, as described above. Depreciation, depletion and amortization expense was $31.9 million and $31.6 million for 2017 and 2016, respectively.

Flexible Products & Services

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Net sales decreased 0.6 percent to $286.4 million for 2017 compared with $288.1 million for 2016. This decrease was primarily due to the impact of non-material divestitures in 2016 of $6.5 million and the impact of foreign currency translation of $6.5 million, offset by strategic pricing decisions.

Gross profit was $51.1 million for 2017 compared with $42.0 million for 2016. This increase was primarily attributable to reduced labor and fixed production costs and the impact of strategic volume and pricing decisions. Gross profit margin increased to 17.8 percent for 2017 from 14.6 percent for 2016.

Operating profit was $5.8 million for 2017 compared with an operating loss of $15.5 million for 2016. This improvement in operating profit was primarily due to the same factors impacting the segment's gross profit, as well as a decrease in non-cash asset impairment charges of $6.3 million and a decrease in restructuring charges of $5.1 million.

EBITDA was $11.1 million for 2017 compared with negative $11.3 million for 2016. This improvement was due to the same factors that impacted the segment’s operating profit, as described above. Depreciation, depletion and amortization expense was $7.0 million for 2017 compared with $7.7 million for 2016.

Land Management

As of October 31, 2017, we estimated that there were 20,000 acres in the United States of special use property, which we expect will be available for sale in the next five to seven years.

Net sales were $28.2 million and $24.2 million for 2017 and 2016, respectively. The increase in net sales was primarily due to an increase in timber sales.

Operating profit increased to $10.1 million for 2017 from $8.1 million for 2016. This increase was due to the same factor that impacted the segment's net sales, as described above.

EBITDA was $14.6 million and $11.9 million for 2017 and 2016, respectively. This increase was due to the same factors that impacted the segment’s operating profit. Depreciation, depletion and amortization expense was $4.6 million for 2017 compared with $3.8 million for 2016.

Other Income Statement Changes

Interest Expense, net

Interest expense, net was $60.1 million and $75.4 million for 2017 and 2016, respectively. This decrease was primarily due to the repayment of Senior Notes due February 2017 with funds borrowed at a lower interest rate under our 2017 Credit Agreement, along with lower year-over-year debt balances.

Other Expense, net

Other expense, net was $12.0 million and $9.0 million for 2017 and 2016, respectively.

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U.S. and Non-U.S. Income before Income Tax Expense

Refer to the following tables for details of the U.S. and non-U.S. income before income taxes and U.S. and non-U.S. income before income taxes after eliminating the impact of non-cash asset impairment charges, non-cash pension settlement charges, restructuring charges, and (gains) losses on sales of businesses.

Summary

	Year ended October 31,	
	2017	2016
Non-U.S. % of Consolidated Net Sales	51.1 %	51.5 %
U.S. % of Consolidated Net Sales	48.9 %	48.5 %
	100.0 %	100.0 %
Non-U.S. % of Consolidated I.B.I.T.	42.6 %	35.3 %
U.S. % of Consolidated I.B.I.T.	57.4 %	64.7 %
	100.0 %	100.0 %
Non-U.S. % of Consolidated I.B.I.T. before Special Items	43.5 %	50.0 %
U.S. % of Consolidated I.B.I.T. before Special Items	56.5 %	50.0 %
	100.0 %	100.0 %

Non-U.S. I.B.I.T. Reconciliation

	Year ended October 31,	
	2017	2016
Non-U.S. I.B.I.T.	$85.2	$49.9
Non-cash asset impairment charges	2.2	29.9
Goodwill impairment charges	13.0	—
Non-cash pension settlement charge	1.2	—
Restructuring charges	10.8	20.5
Loss on sale of businesses	1.7	16.6
Total Non-U.S. Special Items	28.9	67.0
Non-U.S. I.B.I.T. before Special Items	$114.1	$116.9

U.S. I.B.I.T. Reconciliation

	Year ended October 31,	
	2017	2016
U.S. I.B.I.T.	$115.1	$91.3
Non-cash asset impairment charges	5.6	21.5
Timberland gains	25.9	—
Restructuring charges	1.9	6.4
(Gain) Loss on sale of businesses	—	(2.1)
Total U.S. Special Items	33.4	25.8
U.S. I.B.I.T. before Special Items	$148.5	$117.1

*Income Before Income Tax expense = I.B.I.T.

Income Tax Expense

We had operations in over 40 countries during 2017. Operations outside of the United States are subject to additional risks that may not exist, or be as significant, within the United States. Our global operations in these countries results in the need to address complex and varying tax systems on a constantly changing basis.

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Preparation of our financial statements requires the use of estimates and assumptions that affect the reported amounts of our assets and liabilities and revenues and expenses as of the balance sheet date. The multitude of tax jurisdictions, with varying laws, creates a level of uncertainty, and significant judgment is required when addressing the complex tax systems. Our effective tax rate and the amount of taxes we pay are dependent upon various factors, including the following: the laws and regulations of the tax jurisdictions in which income is earned; the recognition of permanent book/tax basis differences realized through the non-deductible write-off of goodwill allocated to divestitures and impairment of other intangibles; the ability to realize deferred tax assets at certain international subsidiaries; negotiation and dispute resolution with taxing authorities in the U.S. and international jurisdictions; and changes in tax laws, regulations, administrative rulings and common law.

The provision for income taxes is computed using the asset and liability method, under which deferred tax assets and liabilities are recognized currently for the expected future tax consequences of temporary differences between the financial reporting and the tax bases of assets and liabilities. This method includes an estimate of the future realization of tax losses. Deferred tax assets and liabilities are measured using the currently enacted tax rates that apply to taxable income in effect for the years in which those tax assets are expected to be realized or settled.

In year 2017, tax expense was $67.2 million on $200.3 million of pretax income, as compared to the fiscal year 2016, where tax expense was $66.5 million on $141.2 million of pretax income. Tax expense in 2017 increased by $13.8 million due to the mix of income and losses among various jurisdictions, including changes in losses and income from jurisdictions for which a valuation allowance has been provided, as well as the timing of recognition of the related tax expense under Accounting Standards Codification ("ASC") 740-270. There was also an increase in tax expense of $7.0 million for unremitted foreign earnings under ASC 740-30 (formally APB23). However, these tax increases were largely offset by decreases in tax expense of $10.4 million related to changes in the measurement of uncertain tax positions netted against releases resulting from audit settlements and expiration of the statute of limitations in several jurisdictions; withholding tax expense decreased by $2.9 million; and other taxes decreased by $6.8 million. The net difference in tax expense was an increase of $0.7 million.

During 2017, the valuation allowance account increased by $40.3 million, which consisted of the following: $1.3 million of decreases due to currency translation; $1.2 million of net increases in new valuation allowances; and $40.4 million of net incremental increases against net operating losses and other net deferred tax assets.

During 2016, the valuation allowance account increased by $2.6 million, which consisted of the following: $0.8 million of increases due to currency translation; $2.2 million of net increases in new valuation allowances; and $0.4 million of net incremental decreases against net operating losses and other net deferred tax assets. The impact of the decrease in valuation allowances was not material to our 2016 effective tax rate.

We analyze potential income tax liabilities related to uncertain tax positions in the United States and international jurisdictions. The analysis of potential income tax liabilities results in estimates of income tax liabilities recognized for uncertain tax positions following the guidance of ASC 740, “Income Taxes.” The estimation of potential tax liabilities related to uncertain tax positions involves significant judgment in evaluating the impact of uncertainties in the application of ASC 740 and other complex tax laws. We periodically analyze both potential income tax liabilities and existing liabilities for uncertain tax positions resulting in both new reserves and adjustments to existing reserves in light of changing facts and circumstances. This includes the release of existing liabilities for uncertain tax positions based on the expiration of statutes of limitation. During 2017, recognition of uncertain tax positions decreased primarily due to audit and statute of limitations releases attributable to non-US jurisdictions; whereas in 2016, the uncertain tax positions increased primarily due to new positions largely attributable to non-U.S. jurisdictions.

The ultimate resolution of potential income tax liabilities may result in a payment that is materially different from our current estimates. If our estimates recognized under ASC 740 prove to be different than what is ultimately resolved, such resolution could have a material impact on our financial condition and results of operations. While predicting the final outcome or the timing of the resolution of any particular tax matter is subject to various risks and uncertainties, we believe that our tax accounts related to uncertain tax positions are appropriately stated.

Prior to the first quarter of 2017, we asserted under ASC 740-30, formerly Accounting Principles Board opinion 23 ("APB 23"), that unremitted earnings of our subsidiaries directly or indirectly owned by Greif International Holding BV (“GIH”) were permanently reinvested. As a result of our debt re-financing concluded in November 2016, we reassessed our unremitted earnings position in the first quarter of 2017. We concluded that the unremitted earnings of subsidiaries owned directly or indirectly by GIH may be used to fully fund the repayment of up to €187.0 million ($203.9 million as of April 30, 2017) of third-party debt of GIH's non-U.S. parent company, Greif Luxembourg Holding Sarl. During 2017, €187.0 million ($203.9 million as of April 30, 2017) of the debt was repaid, utilizing, in part, $104.0 million of pre-2017 earnings distributed during 2017. As a result, deferred tax liabilities of $2.0 million related to withholding taxes was recorded through the fourth quarter of 2017 (initially measured at $3.6 million) with respect to the $104.0 million of pre-2017 unremitted earnings, which represents the total tax liability less current year dividends and releases for all of the pre-2017 unremitted earnings expected to be remitted.

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Beginning in 2017, deferred tax liabilities have been recorded on current year earnings not required to be immediately reinvested by the respective subsidiaries of our foreign holding companies (including holding companies such as GIH, Greif Luxembourg Holding Sarl, and Greif UK International Holding Ltd).

Other than the foregoing change in assertion with respect to current year earnings, we have not recognized U.S. deferred income taxes on a cumulative total of $646.4 million of undistributed earnings from certain of our non-U.S. subsidiaries. Our intention is to reinvest these earnings indefinitely outside the U.S. or to repatriate the earnings only when it is tax-efficient to do so. Therefore, no U.S. tax provision has been accrued related to the repatriation of these earnings. Furthermore, given the uncertainty as to whether we will decide in the future to repatriate earnings and the wide variation in results depending on the various alternatives we could deploy should we decide to do so, it is difficult to make a reliable estimate as to the amount of any additional taxes which may be payable on such undistributed earnings.

Refer to Note 11 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K for further information.

Equity Earnings of Unconsolidated Affiliates, net of Tax

We recorded $2.0 million and $0.8 million of equity earnings of unconsolidated affiliates, net of tax, for 2017 and 2016, respectively.

Net Income Attributable to Noncontrolling Interests

Net income attributable to noncontrolling interests represents the portion of earnings from the operations of our non-wholly owned, consolidated subsidiaries that belongs to the noncontrolling interests in those subsidiaries. Net income attributable to noncontrolling interests was $16.5 million and $0.6 million for 2017 and 2016, respectively. The increase in net income attributable to noncontrolling interests was due primarily to increased earnings of the Flexible Packaging JV.

Net Income Attributable to Greif, Inc.

Based on the factors noted above, net income attributable to Greif, Inc. increased $43.7 million to $118.6 million in 2017 from $74.9 million in 2016.

OTHER COMPREHENSIVE INCOME CHANGES

Foreign currency translation

In accordance with ASC 830, "Foreign Currency Matters," the assets and liabilities denominated in a foreign currency are translated into United States Dollars at the rate of exchange existing at the end of the current period, and revenues and expenses are translated at average exchange rates over the month in which they are incurred. The cumulative translation adjustments, which represent the effects of translating assets, liabilities and operations of our international subsidiaries, are presented in the consolidated statements of changes in equity in accumulated other comprehensive loss. Other comprehensive loss resulting from foreign currency translation for 2018 was $45.5 million. Other comprehensive income resulting from foreign currency translation for 2017 was $37.6 million.

Minimum pension liability, net

Change in minimum pension liability, net of tax for 2018 and 2017 was $16.3 million and $14.2 million, respectively. The other comprehensive income in 2018, resulting from the change in minimum pension liability, net was primarily the result of an $80.0 million contribution to our United States defined benefit plan which resulted in an $11.0 million decrease to our minimum pension liability. The remainder of the change in minimum pension liability, net was primarily due to increases in discount rates offset by negative asset returns.

BALANCE SHEET CHANGES

Working capital changes

The $9.7 million increase in accounts receivable to $456.7 million as of October 31, 2018 from $447.0 million as of October 31, 2017 was primarily due to increased net sales and timing of collections.

The $10.0 million increase in inventories to $289.5 million as of October 31, 2018 from $279.5 million as of October 31, 2017 was primarily due to increased raw material prices.

The $4.6 million increase in accounts payable to $403.8 million as of October 31, 2018 from $399.2 million as of October 31, 2017 was primarily due to increased raw material prices and the timing of payments.

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Other balance sheet changes
The $17.4 million decrease in other intangible assets to $80.6 million as of October 31, 2018 from $98.0 million as of October 31, 2017 was primarily due to amortization expense of $15.2 million recognized during 2018.
The $3.5 million increase in properties, plants and equipment, net to $1,191.9 million as of October 31, 2018 from $1,188.4 million as of October 31, 2017 was primarily due to increased capital expenditures, partially offset by depreciation.
The $53.7 million decrease in long-term debt to $884.1 million as of October 31, 2018 from $937.8 million as of October 31, 2017 was attributable to repayments.
The $43.5 million increase in foreign currency translation loss to $292.8 million as of October 31, 2018 from a loss of $249.3 million as of October 31, 2017 was primarily due to changes in several key foreign currencies compared with the U.S. dollar.
The $9.8 million increase in noncontrolling interest to $46.4 million as of October 31, 2018 from $36.6 million as of October 31, 2017 was primarily due to increased earnings of consolidated joint ventures and foreign currency translation.
LIQUIDITY AND CAPITAL RESOURCES
Our primary sources of liquidity are operating cash flows and borrowings under our senior secured credit facility and the senior notes we have issued and, to a lesser extent, proceeds from our trade accounts receivable credit facility and proceeds from the sale of our non-United States accounts receivable. We use these sources to fund our working capital needs, capital expenditures, cash dividends, common stock repurchases and acquisitions. We anticipate continuing to fund these items in a like manner. We currently expect that operating cash flows, borrowings under our senior secured credit facility, proceeds from our U.S. trade accounts receivable credit facility and proceeds from the sale of our non-United States accounts receivable will be sufficient to fund our anticipated working capital, capital expenditures, cash dividends, debt repayment, potential acquisitions of businesses and other liquidity needs for at least 12 months. Moreover, as a result of the Tax Reform Act, if distributions from operations outside the United States were needed to fund working capital needs, capital expenditures, cash dividends, common stock repurchases, or acquisitions in the United States, there would be no additional U.S. taxes on such distributions.
Capital Expenditures
During 2018, 2017 and 2016, we invested $139.1 million (excluding $8.9 million for purchases of and investments in timber properties), $100.1 million (excluding $9.5 million for purchases of and investments in timber properties), and $101.1 million (excluding $7.1 million for purchases of and investments in timber properties), respectively, in capital expenditures.
We anticipate future capital expenditures, excluding the potential purchases of and investments in timber properties, ranging from $130.0 million to $150.0 million during the year ending October 31, 2019. We anticipate that these expenditures will replace and improve existing equipment and fund new facilities.
Sale of Non-United States Accounts Receivable
In 2012, Cooperage Receivables Finance B.V. (the “Main SPV”) and Greif Coordination Center BVBA, our indirect wholly owned subsidiary, entered into the Nieuw Amsterdam Receivables Purchase Agreement (the “European RPA”) with affiliates of a major international bank (the “Purchasing Bank Affiliates”). In April 2017, the Main SPV and our indirect wholly owned subsidiary amended and extended the term of the existing European RPA. Under the European RPA, as amended, the maximum amount of receivables that may be sold and outstanding under the European RPA at any time is €100 million ($113.7 million as of October 31, 2018). Under the terms of the European RPA, we have the ability to loan excess cash back to the Purchasing Bank Affiliates in the form of a subordinated loan receivable.
Under the terms of the European RPA, we have agreed to sell trade receivables meeting certain eligibility requirements that our indirect wholly owned subsidiary purchases from other of our indirect wholly-owned subsidiaries under a factoring agreement. The structure of the transactions provide for a legal true sale, on a revolving basis, of the receivables transferred from our various subsidiaries to the respective banks and their affiliates. The purchaser funds an initial purchase price of a certain percentage of eligible receivables based on a formula, with the initial purchase price approximating 75 percent to 90 percent of eligible receivables. The remaining deferred purchase price is settled upon collection of the receivables. At the balance sheet reporting dates, we remove from accounts

receivable the amount of proceeds received from the initial purchase price since they meet the applicable criteria of ASC 860, “Transfers and Servicing,” and we continue to recognize the deferred purchase price in other current assets or other current liabilities, as appropriate. The receivables are sold on a non-recourse basis with the total funds in the servicing collection accounts pledged to the banks between settlement dates.

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In October 2007, Greif Singapore Pte. Ltd., our indirect wholly-owned subsidiary, entered into the Singapore Receivable Purchase Agreement (the “Singapore RPA”) with a major international bank. The maximum amount of aggregate receivables that may be financed under the Singapore RPA is 15.0 million Singapore Dollars ($10.8 million as of October 31, 2018). Under the terms of the Singapore RPA, we have agreed to sell trade receivables in exchange for an initial purchase price of approximately 90 percent of the eligible receivables. The remaining deferred purchase price is settled upon collection of the receivables.

Refer to Note 3 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K for additional information regarding these various RPAs.

Acquisitions and Divestitures

During 2018, we completed no divestitures and no acquisitions of businesses. We liquidated two non-strategic non-U.S. businesses in the Flexible Products & Services segment. The gain on disposal of businesses was $0.8 million for the year ended October 31, 2018. Proceeds from divestitures that were completed in 2017 and collected during the year ended October 31, 2018 were $0.5 million. Proceeds from divestitures that were completed in 2015 and collected during the year ended October 31, 2018 were $0.9 million. We have $2.9 million of notes receivable recorded from the sale of businesses, in remaining terms of up to six months.

Refer to Note 2 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K for disclosures regarding our acquisitions and divestitures.

Borrowing Arrangements

Long-term debt is summarized as follows:

(in millions)	October 31, 2018	October 31, 2017
2017 Credit Agreement - Term Loan	$ 277.5	$ 288.8
Senior Notes due 2019	249.1	248.0
Senior Notes due 2021	226.5	230.9
Receivables Facility	150.0	150.0
2017 Credit Agreement - Revolving Credit Facility	3.8	35.0
Other debt	0.7	6.5
	907.6	959.2
Less current portion	18.8	15.0
Less deferred financing costs	4.7	6.4
Long-term debt, net	$ 884.1	$ 937.8

2017 Credit Agreement

Since November 2016, we and certain of our international subsidiaries have been borrowers under a senior secured credit agreement (the “2017 Credit Agreement”) with a syndicate of financial institutions. The 2017 Credit Agreement replaced in its entirety our prior $1.0 billion senior secured credit agreement ("Prior Credit Agreement"). The total available borrowing under the 2017 Credit Agreement was $783.3 million as of October 31, 2018, which has been reduced by $12.9 million for outstanding letters of credit, all of which was then available without violating covenants. The 2017 Credit Agreement provides for an $800.0 million revolving multicurrency credit facility expiring November 3, 2021, and a $300.0 million term loan, with quarterly principal installments that commenced on April 30, 2017, through maturity on November 3, 2021, both with an option to add an aggregate of $550.0 million to the facilities with the agreement of the lenders. We used the proceeds of the term loan on February 1, 2017, to repay the principal of our $300.0 million 6.75% Senior Notes that matured on that date. The revolving credit facility is available to fund ongoing working capital and capital expenditure needs, for general corporate purposes, and to finance acquisitions. Interest is based on either a Eurodollar rate or a base rate that resets periodically plus a calculated margin amount. On November 3, 2016, a total of approximately $208.0 million was used to pay the obligations outstanding under the Prior Credit Agreement in full and certain costs and expenses incurred in connection with the 2017 Credit Agreement. The unamortized financing costs associated with the 2017 Credit Agreement totaled $4.2 million as of October 31, 2018, and are recorded as a direct deduction from the long-term debt liability.

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The 2017 Credit Agreement contains certain covenants, which include financial covenants that require us to maintain a certain leverage ratio and an interest coverage ratio. The leverage ratio generally requires that at the end of any fiscal quarter we will not permit the ratio of (a) our total consolidated indebtedness, to (b) our net income plus depreciation, depletion, and amortization, interest expense (including capitalized interest), and income taxes, minus certain extraordinary gains and non-recurring gains (or plus certain extraordinary losses and non-recurring losses) and plus or minus certain other items for the preceding twelve months ("adjusted EBITDA") to be greater than 4.00 to 1.00 (or 3.75 to 1.00, during any collateral release period). The interest coverage ratio generally requires that at the end of any fiscal quarter we will not permit the ratio of (a) adjusted EBITDA, to (b) the consolidated interest expense to the extent paid or payable, to be less than 3.00 to 1.00, during the applicable preceding twelve month period. As of October 31, 2018, we were in compliance with these covenants.

The terms of the 2017 Credit Agreement limit our ability to make "restricted payments", which include dividends and purchases, redemptions and acquisitions of our equity interests. The repayment of this facility is secured by a security interest in our personal property and personal property of certain of our United States subsidiaries, including equipment and inventory and certain intangible assets, as well as a pledge of the capital stock of substantially all of our United States subsidiaries and will be secured, in part, by the capital stock of the non-U.S. borrowers. However, in the event that we receive and maintain an investment grade rating from either Moody's Investors Service, Inc. or Standard & Poor's Corporation, we may request the release of such collateral. The payment of outstanding principal under the 2017 Credit Agreement and accrued interest thereon may be accelerated and become immediately due and payable upon our default in payment or other performance obligations or failure to comply with the financial and other covenants in the 2017 Credit Agreement, subject to applicable notice requirements and cure periods as provided in the 2017 Credit Agreement.

As of October 31, 2018, $281.3 million was outstanding under the 2017 Credit Agreement. The current portion of the 2017 Credit Agreement was $18.8 million and the long-term portion was $262.5 million. The weighted average interest rate on the 2017 Credit Agreement was 3.07% for the year ended October 31, 2018. The actual interest rate on the 2017 Credit Agreement was 3.37% as of October 31, 2018.

Refer to Note 8 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K for additional information regarding the Prior Credit Agreement and the 2017 Credit Agreement.

See "- Financing Commitment for Proposed Acquisition of Caraustar" for information concerning our financing commitment for our proposed acquisition of Caraustar and the impact of such financing on the 2017 Credit Agreement.

Senior Notes

On July 28, 2009, we issued $250.0 million of 7.75% Senior Notes due August 1, 2019. Proceeds from the issuance of these Senior Notes were principally used for general corporate purposes, including the repayment of amounts outstanding under our revolving multicurrency credit facility under our then-existing credit agreement, without any permanent reduction of the commitments thereunder. These Senior Notes are general unsecured obligations of Greif, Inc. only, provide for semi-annual payments of interest at a fixed rate of 7.75% and do not require any principal payments prior to maturity on August 1, 2019. These Senior Notes are not guaranteed by any of our subsidiaries and thereby are effectively subordinated to all of our subsidiaries' existing and future indebtedness. The Indenture pursuant to which these Senior Notes were issued contains covenants, which, among other things, limit our ability to create liens on our assets to secure debt and to enter into sale and leaseback transactions. These covenants are subject to a number of limitations and exceptions as set forth in the Indenture. As of October 31, 2018, we were in compliance with these covenants. The financing costs associated with the Senior Notes due 2019 totaled $0.4 million as of October 31, 2018, and are recorded as a direct deduction from the long-term liability. The $249.1 million outstanding balance as of October 31, 2018 is reported in long-term debt in our consolidated balance sheets because we intend to refinance this obligation on a long-term basis using financing available under our 2017 Credit Agreement or entering into a new financing arrangement. In addition, we are planning to issue $700.0 million of new senior unsecured notes in connection with our proposed acquisition of Caraustar, and, if issued, a portion of the proceeds from these new senior notes are to be used to redeem these Senior Notes. See "- Financing Commitment for Proposed Acquisition of Caraustar" for further information.

Our Luxembourg subsidiary has issued €200.0 million of 7.375% Senior Notes due July 15, 2021. These Senior Notes are fully and unconditionally guaranteed on a senior basis by Greif, Inc. A portion of the proceeds from the issuance of these Senior Notes was used to repay non-U.S. borrowings under our then outstanding senior secured credit facility, without any permanent reduction of the commitments thereunder, with the remaining proceeds available for general corporate purposes, including the financing of acquisitions. These Senior Notes are general unsecured obligations of the Luxembourg subsidiary and Greif, Inc. and provide for semi-annual payments of interest at a fixed rate of 7.375%, and do not require any principal payments prior to maturity on July 15, 2021. The Indenture pursuant to which these Senior Notes were issued contains covenants, which, among other matters, limit our ability to create liens on our assets to secure debt and to enter into sale and leaseback transactions. These covenants are subject to

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a number of limitations and exceptions as set forth in the Indenture. As of October 31, 2018, we were in compliance with these covenants.

Refer to Note 8 and Note 9 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K for additional information regarding the Senior Notes discussed above.

Financing Commitment for Proposed Acquisition of Caraustar

We plan to issue long-term debt to finance our proposed acquisition of Caraustar. In connection with entering into the Merger Agreement described in Item 1(g) of this Form 10-K, we entered into a commitment letter (the “Commitment Letter”) with a syndicate of financial institutions (the “Commitment Parties”) pursuant to which, subject to the terms and conditions of the Commitment Letter, the Commitment Parties have committed to provide (a)(i) a new $1,200.0 million senior secured term loan facility if certain backstopped amendments to the 2017 Credit Agreement are obtained, including to provide for the utilization of $199.0 million of the revolving loan facility thereunder for part of the purchase price of the acquisition and certain other amendments as more fully set forth in the Commitment Letter or (ii) in the event the backstopped amendments to the 2017 Credit Agreement are not obtained, a new senior secured credit facility (collectively, the “Credit Facilities”) and (b) a $700.0 million senior unsecured bridge facility (the “Bridge Facility” and, together with the Credit Facilities, the “Facilities”), to be available in the event that our planned issuance of $700.0 million of senior unsecured notes (the “New Senior Notes”) has not been completed prior to closing of the proposed acquisition. The proceeds of the Facilities and the New Senior Notes are to be used to pay the purchase price of the acquisition of Caraustar, the redemption of our existing $250.0 million of 7.75% Senior Notes due August 1, 2019, the payment of a make whole premium in connection with the redemption of these Senior Notes, and the payment of fees and expenses incurred in connection with the acquisition of Caraustar and the Facilities. The commitment to provide the Facilities is subject to the consummation of the acquisition and certain other customary conditions as more fully set forth in the Commitment Letter. We will pay customary fees and expenses in connection with obtaining the Facilities. We anticipate that the definitive agreements for the Facilities will contain, among other terms, affirmative covenants, negative covenants, financial covenants and events of default, in each case to be negotiated by the parties consistent with the Commitment Letter.

United States Trade Accounts Receivable Credit Facility

On September 28, 2016, certain of our domestic subsidiaries entered into a receivables financing facility (the “Receivables Facility”) with Cooperatieve Rabobank U.A., New York Branch (“Rabobank”), as the agent, managing agent, administrator and committed investor, and The Bank of Tokyo-Mitsubishi UFJ Ltd. as a managing agent, an administrator and a committed investor, by executing and delivering the Second Amended and Restated Transfer and Administration agreement (the "Second Amended TAA"). The Second Amended TAA was renewed on September 26, 2018 to extend the facility through September 26, 2019. The maximum amount available to be borrowed under the Receivables Facility is $150.0 million, subject to the amount of eligible receivables. The financing costs associated with the Receivables Facility are $0.1 million as of October 31, 2018, and are recorded as a direct deduction from the long-term debt liability.

We can terminate the Receivables Facility at any time upon five days prior written notice. The Receivables Facility is secured by certain of our United States trade accounts receivables and bears interest at a variable rate based on the London Interbank Offered Rate (“LIBOR”) or an applicable base rate, plus a margin, or a commercial paper rate plus a margin. Interest is payable on a monthly basis and the principal balance is payable upon termination of the Receivables Facility. The Receivables Facility also contains certain covenants and events of default, which are materially similar to the 2017 Credit Agreement covenants. As of October 31, 2018, we were in compliance with these covenants. Proceeds of the Receivables Facility are available for working capital and general corporate purposes. As of October 31, 2018, the outstanding balance under the Receivables Facility was $150.0 million. We intend to refinance this obligation on a long-term basis and have the intent and ability to consummate a long-term refinancing by exercising the renewal option in the Second Amended TAA.

Refer to Note 8 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K for information regarding the Receivables Facility.

Other

In addition to the amounts borrowed under the 2017 Credit Agreement and proceeds from the Senior Notes and the Receivables Facility, as of October 31, 2018, we had outstanding other debt of $0.7 million in long-term debt and $7.3 million in short-term borrowings. There are no financial covenants associated with other debt.

As of October 31, 2018, annual maturities, including the current portion of long-term debt, were $417.9 million in 2019, $30.0 million in 2020, $249.3 million in 2021, $210.1 million in 2022, zero in 2023 and $0.3 million thereafter.

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As of October 31, 2018 and 2017, we had deferred financing fees and debt issuance costs of $4.7 million and $6.4 million, respectively. Refer to Note 8 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K for additional information regarding the deferred financing fees.

Financial Instruments

Interest Rate Derivatives

During the first quarter of 2017 we entered into a forward interest rate swap with a notional amount of $300.0 million. As of February 1, 2017, we began to receive variable rate interest payments based upon one month U.S. dollar LIBOR and in return pay a fixed spread, depending on our leverage ratio, over the borrowing cost as defined in the 2017 Credit Agreement. This effectively converted the borrowing rate on $300.0 million of debt under the 2017 Credit Agreement from a variable rate to a fixed rate of 1.194% plus an interest spread. This derivative is designated as a cash flow hedge for accounting purposes. Accordingly, any gain or loss on this derivative instrument is reported as a component of other comprehensive income and reclassified into earnings in the same line item associated with the forecasted transaction and in the same period during which the hedged transaction affects earnings.

Gains reclassified to earnings under these contracts were $1.8 million for the year ended October 31, 2018, and losses reclassified to earnings under these contracts were $0.3 million for the year ended October 31, 2017. A derivative gain of $4.6 million, based upon interest rates at October 31, 2018, is expected to be reclassified from accumulated other comprehensive income (loss) to earnings in the next twelve months.

Refer to Note 18 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K for additional information regarding the gain or loss included in other comprehensive income. The assumptions used in measuring fair value of the interest rate derivative are considered level 2 inputs, which are based upon LIBOR and interest paid based upon a designated fixed rate over the life of the swap agreements.

Foreign Exchange Hedges

We conduct business in international currencies and are subject to risks associated with changing foreign exchange rates. Our objective is to reduce volatility associated with foreign exchange rate changes to allow management to focus its attention on business operations. Accordingly, we enter into various contracts that change in value as foreign exchange rates change to protect the value of certain existing foreign currency assets and liabilities, commitments and anticipated foreign currency revenues and expenses.

As of October 31, 2018, we had outstanding foreign currency forward contracts in the notional amount of $194.4 million ($80.1 million as of October 31, 2017). At October 31, 2018, these derivative instruments were designated and qualified as fair value hedges. Adjustments to fair value for fair value hedges are recognized in earnings, offsetting the impact of the hedged item. The assumptions used in measuring fair value of foreign exchange hedges are considered level 2 inputs, which were based on observable market pricing for similar instruments, principally foreign exchange futures contracts. Realized losses recorded in other expense, net under fair value contracts were $9.2 million, $1.8 million and $2.7 million for the twelve months ended October 31, 2018, 2017 and 2016, respectively.

Cross Currency Swap

We have operations and investments in various international locations and are subject to risks associated with changing foreign exchange rates. On March 6, 2018, we entered into a cross currency interest rate swap agreement that synthetically swaps $100.0 million of fixed rate debt to Euro denominated fixed rate debt at a rate of 2.352%. The agreement is designated as a net investment hedge for accounting purposes and will mature on March 6, 2023. Accordingly, the gain or loss on this derivative instrument is included in the foreign currency translation component of other comprehensive income until the net investment is sold, diluted, or liquidated. Interest payments received for the cross currency swap are excluded from the net investment hedge effectiveness assessment and are recorded in interest expense, net on the consolidated statements of income. See Note 9 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K for additional information regarding the cross currency swap.

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Contractual Obligations
As of October 31, 2018, we had the following contractual obligations:

		Payments Due by Period			
(in millions)	Total	Less than 1 year	1-3 years	3-5 years	After 5 years
Long-term debt, net of deferred financing costs	$884.1	$397.2	$ 276.5	$ 210.1	$ 0.3
Short-term borrowings	7.3	7.3	—	—	—
Operating and capital lease obligations	286.1	50.7	80.3	58.8	96.3
Liabilities held by special purpose entities	43.3	2.2	41.1	—	—
Contingent liabilities and environmental reserves	6.8	2.0	1.1	0.9	2.8
Current portion of long-term debt	18.8	18.8	—	—	—
Mandatorily redeemable noncontrolling interests	8.6	—	3.4	5.1	—
Total	$1,255.0	$478.2	$ 402.4	$ 274.9	$ 99.4

Environmental reserves are estimates based on current remediation plans; actual liabilities could significantly differ from the reserve estimates.

We have no near-term pension funding obligations. Because the amount of such obligations in future years is not reasonably estimable, they have been excluded from the contractual obligations table. We intend to make pension contributions of $15.6 million during 2019, which consists of $10.6 million of employer contributions and $5.0 million of benefits paid directly by the employer. These contributions are not contractually obligated, and therefore are not included in the table above.

Our unrecognized tax benefits under ASC 740, “Income Taxes” have been excluded from the contractual obligations table because of the inherent uncertainty and the inability to reasonably estimate the timing of cash outflows.

Stock Repurchase Program and Other Share Acquisitions

Our Board of Directors has authorized the purchase of Class A Common Stock or Class B Common Stock or any combination of the foregoing up to 4,703,487 shares as of October 31, 2018. Refer to Note 14 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K for additional information regarding this program and the repurchase of shares of Class A and Class B Common Stock.

Effects of Inflation

Inflation did not have a material impact on our operations during 2018, 2017 or 2016.

Critical Accounting Policies

A summary of our significant accounting policies is included in Note 1 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K. We believe that the consistent application of these policies enables us to provide readers of the consolidated financial statements with useful and reliable information about our results of operations and financial condition. The following are the accounting policies that we believe are most important to the portrayal of our results of operations and financial condition and require our most difficult, subjective or complex judgments.

Other items that could have a significant impact on the financial statements include the risks and uncertainties listed in Part I, Item 1A – Risk Factors. Actual results could differ materially using different estimates and assumptions, or if conditions are significantly different in the future.

Assets and Liabilities Held for Sale. Assets and liabilities held for sale represent land, buildings and land improvements less accumulated depreciation as well as any other assets or liabilities that are held for sale in conjunction with the sale of a business. We record assets and liabilities held for sale in accordance with ASC 360 “Property, Plant, and Equipment,” at the lower of carrying value or fair value less cost to sell. Fair value is based on the estimated proceeds from the sale of the facility utilizing recent purchase offers, market comparables and/or data obtained from our commercial real estate broker. Our estimate as to fair value is regularly reviewed and subject to changes in the commercial real estate markets and our continuing evaluation as to the facility’s acceptable sale price. See Note 4 and Note 9 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K for additional information regarding assets and liabilities held for sale.

Goodwill and Indefinite-Lived Intangibles Impairment Testing. We account for goodwill in accordance with ASC 350, “Intangibles – Goodwill and Other.” Under ASC 350, purchased goodwill is not amortized, but instead is tested for impairment either annually or when events and circumstances indicate an impairment may have occurred. Our goodwill impairment assessment is performed by reporting unit. A reporting unit is the operating segment, or a business one level below that operating segment (the component level) if discrete financial information is prepared and regularly reviewed by segment management. However, components are aggregated as a single reporting unit if they have similar economic characteristics. In conducting the annual impairment tests, the estimated fair value of each of our reporting units is compared to its carrying amount including goodwill. If the estimated fair value exceeds the carrying amount, then no impairment exists. If the carrying amount exceeds the estimated fair value an impairment is indicated.

The Rigid Industrial Packaging & Services segment consists of five operating segments: Rigid Industrial Packaging & Services – North America; Rigid Industrial Packaging & Services – Latin America; Rigid Industrial Packaging & Services – Europe, Middle East and Africa; Rigid Industrial Packaging & Services – Asia Pacific; and Rigid Industrial Packaging & Services – Tri-Sure. Each of these operating segments consists of multiple components that have discrete financial information available that is reviewed by segment management on a regular basis. We have evaluated these components and concluded that they are economically similar and should be aggregated into five separate reporting units. For the purpose of aggregating our components, we review the long-term performance of gross profit margin and operating profit margin. Additionally, we review qualitative factors such as common customers, similar products, similar manufacturing processes, sharing of resources, level of integration, and interdependency of processes across components. We place greater weight on the qualitative factors outlined in ASC 280 “Segment Reporting” and consider the guidance in ASC 350 in determining whether two or more components of an operating segment are economically similar and can be aggregated into a single reporting unit. However, our assessment of the aggregation includes both qualitative and quantitative factors and is based on the facts and circumstances specific to the components.

The estimated fair value of the reporting units utilized in the impairment test is based on a discounted cash flow analysis or income approach and market multiple approach. Under this method, the principal valuation focus is on the reporting unit’s cash-generating capabilities. The discount rates used for impairment testing are based on our weighted average cost of capital. The use of alternative estimates, peer groups or changes in the industry, or adjusting the discount rate, earnings before interest, taxes, depreciation, depletion and amortization multiples or price earnings ratios used could affect the estimated fair value of the assets and potentially result in impairment. Any identified impairment would result in an adjustment to our results of operations.

We performed our annual goodwill impairment test in the fourth quarter of 2018 as of August 1. In performing the test, we first evaluate qualitative factors, such as macroeconomic conditions and our overall financial performance to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount, including goodwill. We then evaluate how significant each of the identified factors could be to the fair value or carrying amount of a reporting unit and weigh these factors in totality in forming a conclusion of whether or not it is more likely than not that the fair value of a reporting unit is less than its carrying amount (the Step 0 Test). If necessary, the next step in the goodwill impairment test involves comparing the fair value of each of the reporting units to the carrying value of those reporting units. If the carrying value of a reporting unit exceeds the fair value of the reporting unit, an impairment loss would be recognized (not to exceed the carrying amount of goodwill). Our Rigid Industrial Packaging & Services - Latin America, Flexible Products & Services and Land Management reporting units have no goodwill and therefore no impairment test was required. For our Rigid Industrial Packaging & Services - North America; Rigid Industrial Packaging & Services - Europe, Middle East and Africa; Rigid Industrial Packaging & Services - Tri-Sure; and Paper Packaging & Services reporting units, a Step 0 approach was used and we determined it was not more likely than not that the fair value of the reporting unit was less than its carrying amount. As of August 1, 2018, the estimated fair value of each of these reporting units was deemed to substantially exceed the carrying amount of assets and liabilities assigned to each reporting unit.

For the Rigid Industrial Packaging & Services - Asia Pacific reporting unit we proceeded directly to the quantitative impairment testing. The fair value of the reporting unit exceeded the carrying value by 20%, so no impairment was deemed to exist. Discount rates, growth rates and cash flow projections are the assumptions that are most sensitive and susceptible to change as they require significant management judgment. In addition, certain future events and circumstances, including deterioration of market conditions, higher cost of capital, a decline in actual and expected consumption and demand, could result in changes to these assumptions and judgments. A revision of these assumptions could cause the fair value of the reporting unit to fall below its respective carrying value. As for all of our reporting units, if in future years, the reporting unit's actual results are not consistent with our estimates and assumptions used to calculate fair value, we may be required to recognize material impairments to goodwill.

During the fourth quarter of 2017, we performed an assessment of our operating segments and determined that as a result of changes in the way the chief operating decision maker receives and reviews financial information, a realignment of our operating segment and reporting unit structure was necessary. As of our annual goodwill impairment testing date of August 1, 2017, our

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reporting units of the Rigid Industrial Packaging & Services segment were realigned to consist of Rigid Industrial Packaging & Services – North America; Rigid Industrial Packaging & Services – Latin America; Rigid Industrial Packaging & Services – Europe, Middle East and Africa; Rigid Industrial Packaging & Services – Asia Pacific; and Rigid Industrial Packaging & Services – Tri-Sure. As a result of the realignment, goodwill was reassigned to each of the Rigid Industrial Packaging & Services reporting units using a relative fair value approach. There were no changes to the reporting units of the Paper Packaging & Services; Flexible Products & Services; and Land Management segments. No reporting units were aggregated for purposes of conducting the annual impairment test.
Due to the realignment of our reporting units in the fourth quarter of 2017, we recorded an impairment charge of $13.0 million, which represented goodwill associated with the Rigid Industrial Packaging & Services segment as the carrying amount of the Rigid Industrial Packaging & Services – Latin America reporting unit exceeded its fair value. Our annual impairment test in 2016 resulted in no goodwill impairment charges. Refer to Note 5 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K for further information.

The following table summarizes the carrying amount of goodwill by reporting unit for the ended October 31, 2018 and 2017:

(in millions)	Goodwill Balance October 31, 2018	October 31, 2017
Rigid Industrial Packaging & Services		
North America	$252.8	$252.9
Europe, Middle East and Africa	297.1	304.6
Asia Pacific	88.8	89.4
Tri-Sure	77.8	79.0
Paper Packaging & Services	59.5	59.5
Total	$776.0	$785.4

*The Rigid Industrial Packaging & Services: Latin America, Flexible Products & Services, and Land Management reporting units have no goodwill balance at either reporting period.
We test for impairment of indefinite-lived intangible assets during the fourth quarter of each fiscal year as of August 1, or more frequently if certain indicators are present or changes in circumstances suggest that impairment may exist.
Long-lived Asset Impairment Testing. Long-lived assets are grouped together at the lowest level, generally at the plant level, for which identifiable cash flows are largely independent of cash flows of other groups of long-lived assets. As events warrant, we evaluate the recoverability of long-lived assets, other than goodwill and other intangible assets, by assessing whether the carrying value can be recovered over their remaining useful lives through the expected future undiscounted operating cash flows of the underlying asset groups. Impairment indicators include, but are not limited to, a significant decrease in the market price of a long-lived asset; a significant adverse change in the manner in which the asset is being used or in its physical condition; a significant adverse change in legal factors or the business climate that could affect the value of a long-lived asset; an accumulation of costs significantly in excess of the amount originally expected for the acquisition or construction of a long-lived asset; current period operating or cash flow losses combined with a history of operating or cash flow losses associated with the use of the asset; or a current expectation that it is more likely than not that a long-lived asset will be sold or otherwise disposed of significantly before the end of its previously estimated useful life. Future decisions to change our manufacturing processes, exit certain businesses, reduce excess capacity, temporarily idle facilities and close facilities could result in material impairment charges. Any impairment loss that may be required is determined by comparing the carrying value of the assets to their estimated fair value.
See Note 9 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K for additional information regarding the fair value of our long-lived assets.

Income Taxes. Preparation of our financial statements requires the use of estimates and assumptions that affect the reported amounts of our assets and liabilities and revenues and expenses. The multitude of tax jurisdictions in which we operate requires significant judgment when applying the complex tax regulations to estimate our global tax position. Our effective tax rate and the amount of taxes we pay are dependent upon various factors including the following: the laws and regulations, and varying tax rates of the country tax jurisdictions in which income is earned; the recognition of permanent book/tax basis differences realized through acquisitions, divestitures and asset impairments; the ability to realize long term deferred tax assets at certain international subsidiaries; negotiation and dispute resolution with taxing authorities in the U.S. and non-U.S. jurisdictions arising from federal, state and local country tax audits; and changes in tax laws, regulations, administrative rulings and common law.

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Refer to Note 11 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K for further information.

Pension and Postretirement Benefits. Pension and postretirement assumptions are significant inputs to the actuarial models that measure pension and postretirement benefit obligations and related effects on operations. Two assumptions – discount rate and expected return on assets – are important elements of plan expense and asset/liability measurement. We evaluate these critical assumptions at least annually on a plan and country-specific basis. At least annually, we evaluate other assumptions involving demographic factors, such as retirement age, mortality and turnover, and update them to reflect our experience and expectations for the future. Actual results in any given year will often differ from actuarial assumptions because of economic and other factors.

Accumulated and projected benefit obligations are measured as the present value of future cash payments. We discount those cash payments using the weighted average of market-observed yields for high quality fixed income securities with maturities that correspond to the payment of benefits. Lower discount rates increase present values and subsequent-year pension expense; higher discount rates decrease present values and subsequent-year pension expense. Our weighted discount rates for consolidated pension plans at October 31, 2018, 2017 and 2016 were 3.48%, 3.01% and 3.08%, respectively, reflecting market interest rates.

To develop the expected long-term rate of return on assets assumption, we use a generally consistent approach worldwide. The approach considers various sources, primarily inputs from a range of advisors, inflation, bond yields, historical returns and future expectations for returns for each asset class, as well as the target asset allocation of each pension portfolio. This rate is gross of any investment or administrative expenses. Assets in our principal pension plans lost approximately 1.6% in 2018. Based on our analysis of future expectations of asset performance, past return results, and our current and expected asset allocations, we have assumed a 4.12% long-term expected return on those assets for cost recognition in 2019. This is a reduction from the 4.53%, 5.39% and 5.51% long-term expected return we had assumed in 2018, 2017 and 2016, respectively.

Changes in key assumptions for our consolidated pension and postretirement plans would have the following effects.

- Discount rate – A 25 basis point increase in discount rate would decrease pension and postretirement cost in the following year by $1.5 million and would decrease the pension and postretirement benefit obligation at year-end by about $23.3 million.
- Expected return on assets – A 50 basis point decrease in the expected return on assets would increase pension and postretirement cost in the following year by $3.0 million.

Further discussion of our pension and postretirement benefit plans and related assumptions is contained in Note 12 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K.

Revenue Recognition. We recognize revenue when title passes to customers or services have been rendered, with appropriate provision for returns and allowances. Revenue is recognized in accordance with ASC 605, “Revenue Recognition.”

Timberland disposals, timber and special use property revenues are recognized when closings have occurred, required down payments have been received, title and possession have been transferred to the buyer, and all other criteria for sale and profit recognition have been satisfied.

We report the sale of timberland property in "timberland gains," the sale of HBU and surplus property in “gain on disposal of properties, plants and equipment, net” and the sale of timber and development property under “net sales” and “cost of products sold" in our consolidated statements of income. All HBU and development property, together with surplus property, is used to productively grow and sell timber until the property is sold.

Variable Interest Entities. We evaluate whether an entity is a variable interest entity (“VIE”) and determine if the primary beneficiary status is appropriate on a quarterly basis. We consolidate VIE’s for which we are the primary beneficiary. If we are not the primary beneficiary and an ownership interest is held, the VIE is accounted for under the equity method of accounting. When assessing the determination of the primary beneficiary, we consider all relevant facts and circumstances, including: the power to direct the activities of the VIE that most significantly impact the VIE’s economic performance and the obligation to absorb the expected losses and/or the right to receive the expected returns of the VIE.

Flexible Packaging Joint Venture

In 2010, we formed a joint venture (referred to herein as the “Flexible Packaging JV”) with Dabbagh Group Holding Company Limited and one of its subsidiaries, originally National Scientific Company Limited and now Gulf Refined Packaging for Industrial Packaging Company LTD ("GRP"). The Flexible Packaging JV owns the operations in the Flexible Products & Services segment. The Flexible Packaging JV has been consolidated into our operations as of its formation date of September 29, 2010.

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All entities contributed to the Flexible Packaging JV were existing businesses acquired by us and were reorganized under Greif Flexibles Asset Holding B.V. and Greif Flexibles Trading Holding B.V. ("Asset Co." and "Trading Co."), respectively. We have 51 percent ownership in Trading Co. and 49 percent ownership in Asset Co. and Global Textile. However, we and GRP have equal economic interests in the Flexible Packaging JV, notwithstanding the actual ownership interests in the various legal entities. All investments, loans and capital contributions are to be shared equally by us and GRP and each partner has committed to contribute capital of up to $150.0 million and obtain third party financing for up to $150.0 million as required.

The Flexible Packaging JV is deemed to be a VIE since the total equity investment at risk is not sufficient to permit the legal entity to finance its activities without additional subordinated financial support from us. We are the primary beneficiary because we have (1) the power to direct the activities of the VIE that most significantly impact the VIE's economic performance, and (2) the obligation to absorb losses of the VIE that could potentially be significant to the VIE or the right to receive benefits from the VIE that could potentially be significant to the VIE.

Recent Accounting Standards

See Note 1 of the Notes to Consolidated Financial Statements included in Item 8 of this Form 10-K for a detailed description of recently issued and newly adopted accounting standards.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Interest Rate Risk

We are subject to interest rate risk related to our financial instruments that include borrowings under the 2017 Credit Agreement, proceeds from our Senior Notes and Receivables Facility, and cross currency and interest rate swap agreements. We do not enter into financial instruments for trading or speculative purposes. The interest rate swap agreements have been entered into to manage our exposure to variability in interest rates.

We have an interest rate swap agreement with an aggregate notional amount of $300.0 million as of October 31, 2018. The interest rate swap agreement is used to manage our fixed and floating rate debt mix. Under certain of these agreements, we receive interest monthly from the counterparties equal to LIBOR and pay interest at a fixed rate over the life of the contracts. A gain on interest rate swap contracts was recorded in the amount of $1.8 million for the year ended October 31, 2018 and a loss on interest rate swap contracts was recorded in the amount of $0.3 million for the year ended October 31, 2017.

We have a cross currency interest rate swap agreement that synthetically swaps $100.0 million of fixed rate debt to Euro denominated fixed rate debt at a rate of 2.352%. The gain or loss on this derivative instrument is included in the foreign currency translation component of other comprehensive income until the net investment is sold, diluted, or liquidated. Interest payments received for the cross currency swap are excluded from the net investment hedge effectiveness assessment and are recorded in interest expense, net on the consolidated statements of income. A gain on the cross currency swap agreement was recorded in interest expense for the amount of $1.6 million for the year ended October 31, 2018.

The tables below provide information about our derivative financial instruments and other financial instruments that are sensitive to changes in interest rates. For our 2017 Credit Agreement, Senior Notes and Receivables Facility, the tables present scheduled amortizations of principal and the weighted average interest rate by contractual maturity dates as of October 31, 2018 and 2017.

The fair values of our 2017 Credit Agreement, Senior Notes and Receivables Facility are based on rates available to us for debt of the same remaining maturity as of October 31, 2018 and 2017.

Financial Instruments

As of October 31, 2018 (Dollars in millions)

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	Expected Maturity Date							
	2019	2020	2021	2022	2023	After 2023	Total	Fair Value
2017 Credit Agreement:								
Scheduled amortizations	$ 19	$ 30	$ 23	$ —	$ —	$ —		